JOURNAL
OF THE
AMERICAN WATER WORKS ASSOCIATION

Vol. 35 DECEMBER 1943 No. 12

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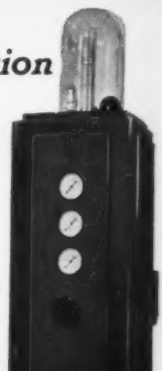

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Vol. 35 December 1943 No. 12

Importance of the Distribution System

By Louis R. Howson

IN endeavoring to appraise the importance of the distribution system in water works practice, I first turned to the A.W.W.A. Journal, an inspection of which disclosed that there were over twice as many papers relating to water quality and water treatment as there were with reference to the distribution system, including meters, unaccounted for water, etc. Probably this is as it should be, for water quality is a matter of life and death, whereas proper design, operation and maintenance of a distribution system is primarily a question of economics. Undoubtedly this seeming lack of proper consideration for the economics of water supply results from the inability of the various program committees to secure constructive papers on so prosaic a subject.

As a second step in appraising the economic importance of the water distribution system, the summaries of 16 recent water works appraisals were analyzed. The analyses showed that for these 16 plants the distribution system valuation averaged 66.8 per cent of the total plant value. While this percentage varied somewhat for individual plants, all but two fell within a range of 20 per cent of this numerical average. The weighted average of the percentage of the distribution value to the total plant value of the 16 plants was 65.3 per cent. It may be roughly stated, therefore, that two-thirds of the total value of the average water works is found in the distribution system. A check of valuations made as remote as 30 years ago shows this ratio to have remained practically constant.

The fact that two-thirds of the value of the ordinary water works is in the distribution system, and that 80 per cent of the distribution system value is in the item of mains and valves, indicates one of the most valuable yardsticks for an approximate indication of the value of a water works property of which there is no detailed

A paper presented on October 20, 1943, at the Milwaukee Meeting of the Wisconsin Section by Louis R. Howson, Cons. Engr., Alvord, Burdick & Howson, Engrs., Chicago.

inventory available. The length of pipe of the various sizes in the distribution system is always a matter of record and capable of easy conversion into tons. Normally the weight of pipe in a cast-iron distribution system will approximate 275 to 300 tons per thousand population. Analysis of 9 recent water works valuations, most of which involved transfer of ownership, revealed that the value of the entire system per ton of pipe in the distribution system was approximately $200. Cities with well supplies or without treatment will normally fall somewhat under the $200 per ton group, and those with impounded supplies and costly purification works will be normally somewhat above the $200 per ton figure. The application of this figure, however, varied with respect to the facts relating to the source of supply in each particular case, will give a convenient and very approximate indication of the valuation of the entire water works property at the present time.

An analysis of these same 9 water works valuations showed that the average per capita value as of the present time was $63. Since two-thirds of the value of a water works system is normally in the distribution system, it is apparent that the present-day distribution system in the average city has a value equivalent to about $40 per capita.

Design of the Distribution System

Too many distribution systems just grow. Very few distribution systems were scientifically designed originally and through growth, concentration and shifting demands need almost constant checking. The problem of designing an entirely new distribution system is seldom met in practice. The more frequent problem is that of designing a feeder or circulating system to correct deficiencies in capacity resulting from growth, reduction in carrying capacity or allied causes. The National Board of Fire Underwriters, through periodic tests of distribution systems, has done much to uncover weaknesses and to indicate the requirements for reinforcement.

Every water distribution system supplies two distinct services, namely, the furnishing of normal domestic and industrial requirements and the water required to fight fires.

The former type of service extends more or less continuously over the entire area served. Fire demands are intermittent, concentrated in relatively small areas and of high intensity.

The domestic and industrial needs for water vary from day to day and from hour to hour. Ordinarily the maximum day of the year will be 50 per cent more or less in excess of the average day for the year and on that maximum day the peak hour will be 50 per cent more or less above the 24-hr. average. Accordingly, the annual peak is approximately 2½ times the average rate for the year. These percentages are subject to material variations for various cities but are sufficiently accurate for use in illustrating the comparative importance of ordinary and fire demands on the distribution system.

The fact that the maximum rates prevail during but a portion of the day, makes it possible to provide for them in whole or in part by storage in reservoirs or elevated tanks. Ordinarily, if elevated storage of from 20 to 40 gal. per capita is available, the rate of pumpage can be constant throughout 24 hr. of the day with all peaks met with

water drawn from storage. It is, however, not necessary to provide storage in this amount to secure most of the benefits. Storage in the amount of but 25 per cent of the total storage requirement will ordinarily result in lowering the peak rate of pumpage by half its excess over the daily average. This 25 per cent storage provision is equivalent to only 5 to 10 gal. storage per capita.

Elevated tank storage sufficient to iron out hourly peaks completely is not very costly. Assuming 30 gal. per capita as the storage required in order that the supply and pumping equipment may operate at a uniform rate throughout 24 hr. of the day, the approximate present-day costs would be:

Population	Elevated Tank Capacity	Elevated Tank Cost @ 12¢/lb.	% Tank Cost to Value of Distr. System
5,000	150,000	18,000	9.00
25,000	750,000	69,000	6.90
50,000	1,500,000	132,000	6.60
100,000	3,000,000	250,000	6.25
200,000	6,000,000	500,000	6.25

The cost of adequate elevated storage is thus from $2.50 to $3.60 per capita. Interest and depreciation at 6 per cent on this cost for municipal plants is but from 15¢ to 22¢ per capita per year, the equivalent of from 25 per cent to 35 per cent of the average power cost where pumping is by electricity. Ability to avoid peak demand charges will frequently cover much of the fixed charges on the investment in elevated storage. The other benefits, such as more uniform pressures, better operation of pumping equipment and safety against power outages, amply justify elevated storage in most water systems. The amount of elevated storage in each case is, of course, dictated by the individual conditions. The above is simply indicative of the possibilities to be developed.

In addition to meeting all variations in domestic, commercial and industrial demands, a distribution system must be so designed as to transport the volume of water required for fighting fires. The rate at which water is required for fire service is a reflection of the character of development whether suburban or metropolitan, fire hazards, etc. It varies approximately as the square root of the population in thousands and is therefore proportionately greater for smaller communities. The following table gives the amount of water required by the Underwriters for fighting fires in cities of various sizes:

Population	Fire Demand gpm.
5,000	2,250
25,000	4,750
50,000	6,500
100,000	9,000
200,000	12,000

The above quantities are required in addition to the ordinary uses at the time, usually considered as 150 per cent of the average for 24 hr.

Fortunately fires do not occur at frequent intervals, but they do occur with sufficient frequency and intensity to demonstrate the wisdom of making adequate provision for them. The extinguishment of fires ordinarily uses less than one-half of 1 per cent of the total pumpage.

The fact that fires are relatively of short duration, indicates the possibility of storage to provide the water required for fighting fires, thus reducing the draft upon the water production system. The following table shows the fire demand rate, the use of water in 10 hr. (Underwriter's requirement),

and the estimated cost of reinforced concrete reservoir construction to store the fire requirements for cities of various populations:

Population	10-hr. Fire Use (Gal.)	Cost of Reinforced Concrete Reservoir*	% of Reservoir Cost to Distribution System Value
5,000	1,350,000	$ 55,000	27.50
25,000	2,750,000	93,000	9.30
50,000	3,900,000	113,000	5.65
100,000	5,400,000	135,000	3.37
200,000	7,200,000	158,000	1.97

* To store fire use—based on E.N.R. Construction Cost Index = 250.

If the topography is such that reservoir storage equal to the fire use can be so located as to float on the distribution system, it will relieve the source of supply, pumping equipment and distribution system of the fire demand and thus affect the total valuation of $63 per capita. It is also available and useful for domestic peaks at all times without cost other than interest and depreciation on the investment.

If the reservoir is built at ground level comparable to the station, but at a point near the opposite end of the distribution system from the pumping station, it is of value to the source of supply and the mains but duplicate pumping equipment will be required. A reservoir of this kind benefits about 90 per cent of the plant valuation when used during fire but is of less value during other periods as booster pumps must be operated to make its benefits available.

If the water required to fight fires is stored in a low service reservoir or clear well at the pumping station, its effect is limited to the source of supply, i.e., usually less than 25 per cent of the property valuation.

An elevated tank to store the quantity of water required for fires in a town of 5000 population would cost about $115,000 or 60 per cent of the value of the entire distribution system. It is evident, therefore, that the primary usefulness of the elevated tank is in equalizing hourly variations in domestic use.

The ratio of the water required for fire protection and for peak domestic uses, is shown as follows:

Population	Peak Domestic Rate @ 225% of 100 gpd. per capita	150% Domestic plus Fire	Ratio Fire to Domestic Peak
5,000	1,125,000	4,250,000	3.70
25,000	5,625,000	10,600,000	1.88
50,000	11,250,000	17,000,000	1.51
100,000	22,500,000	27,900,000	1.24
200,000	45,000,000	47,300,000	1.05

It will be noted that for a city of 5000 the peak demand during fire which is based upon the fire use plus 150 per cent of the average domestic day, is 3.7 times as great as the peak hr. domestic use, decreasing progressively to 1.88 for 25,000 population, 1.51 for 50,000, 1.24 for 100,000, and 1.05 for 200,000. In other words, for a city of approximately 200,000 population or larger, the peak domestic use rather than the fire requirements, determines the size of the distribution system. *For all populations less than 200,000 the fire requirement is the governing factor in the design of the distribution system.*

Size of Mains

A water works distribution system consists of feeder mains and lateral distributors to serve consumers. The proportion of the total flow during fire which is carried through the laterals may vary from a negligible amount where the lateral system consists of 4-in. mains or smaller, to a material proportion where the lateral distribu-

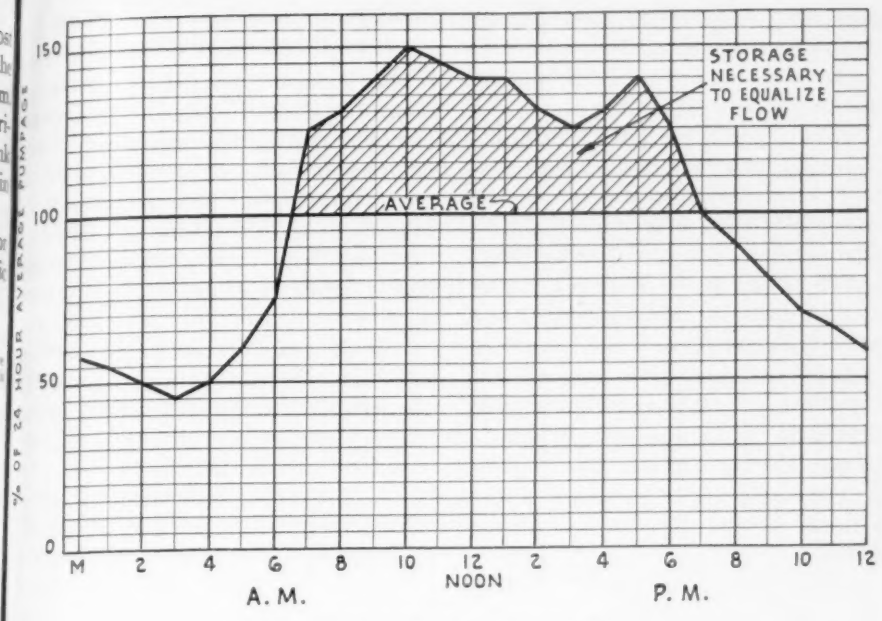

FIG. 1. Typical Hourly Pumpage Rates

tors are 6 in. or larger. In order to ascertain how the pipe sizes vary in the average distribution system, the pipe systems of eight cities varying in population from 5000 to 300,000 were studied. In the average of these systems, approximately 55 per cent of the mileage of mains was 6 in. in diameter with 15 per cent 4 in., another 15 per cent 8 in., and about half of the remainder 12 in. The weighted average size obtained by multiplying the footage of each size by its diameter and dividing the sum of the totals by the lineal feet, is approximately 7 in. This weighted average diameter varied but little between the 8 systems, the maximum variation being not more than 5 per cent either way.

A few cities such as Des Moines, Iowa, have in recent years adopted 8 in. as the minimum size to use, in which case the proportion and capacities of feeder mains is less and the weighted average size of the mains larger. In very few cities, however, does the weighted average size of mains materially exceed 7 in.

Larger diameters of pipe provide more carrying capacity per dollar expended, as is shown by the following table:

Diam. of Pipe-in.	Comparative Carrying Capacity*	Cost per ft. Installed	Relation of Cost to Capacity
4	100	$1.10	1.10
6	292	1.50	.52
8	620	1.95	.31
12	1,800	3.10	.17
16	3,850	4.60	.12
20	6,950	6.35	.09

* Based upon C = 120 of Hazen-Williams formula and pressure drop of 8 ft. per 1000 ft.

The above estimates of cost are

based upon Class B pipe at $50 per ton and costs of laying which were the average of those used in six recent midwestern appraisals.

From an analysis of the above, it is apparent that a 6-in. main costs about 36 per cent more than a 4-in., but with the same friction loss will deliver 192 per cent more water. Correspondingly, an 8-in. which costs 30 per cent more than a 6-in. main, will deliver 112 per cent more water, and a 12-in. which costs 59 per cent more than an 8-in. will deliver 191 per cent more water. Expressed in another way, increasing the pipe diameter by one size increases the carrying capacity from 3 to 4 times as much as the proportionate increase in cost.

Effect of Elevated Storage on E penditures for Feeder Main

As a general line of demarcation, may be assumed that in the ordina distribution system, mains 6 in. in ameter and smaller primarily serve t normal domestic requirements, and th mains 8 in. and larger in addition serving these requirements, have be so designed as to provide a circulato or feeder system to carry the wat from the pumping station or reservoi to the smaller distributing mains. Th beneficial effects of elevated stora are, therefore, primarily limited mains 8 in. and larger.

As previously stated, approximate 70 per cent of the footage of mains i the average distribution system is 6 in

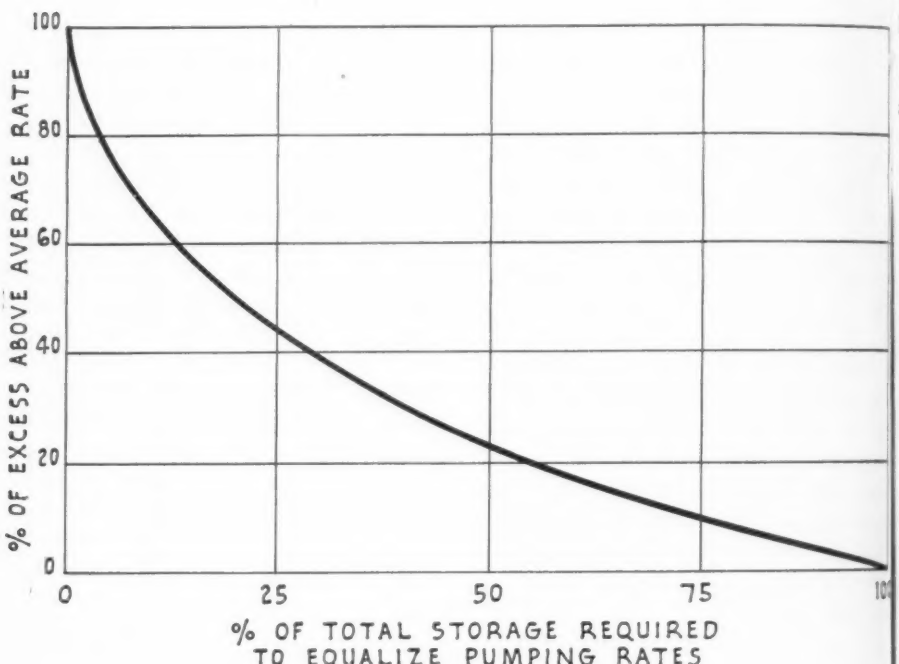

FIG. 2. Effect of Shortage on Reduction in Peak Pumping Rates

or less in diameter. The mains of larger diameter, however, cost more per foot and an analysis of a considerable number of distribution systems shows that approximately 45 per cent of the value of the distribution system is in mains 8 in. and larger.

From the previously developed figures as to the value of the average entire water works system at the present time, the proportion of that value which is in the distribution system, the proportion of the distribution system which is accounted for by mains and the final percentage which mains larger than 8 in. constitute of the total value of mains, it follows that the value of the mains over 8 in. in diameter in the average distribution system is approximately $15 per capita. Thus, in a city of 25,000 people, the value of mains 8 in. and larger might be expected to be approximately $375,000.

Elevated storage sufficient to iron out the daily variations in flow in the average city of 25,000 population would cost approximately $69,000 at the present time, the equivalent of 18 per cent of the investment in feeder mains 8 in. and larger. If the topography is such that this peak requirement could be stored in a concrete reservoir, it would cost $36,000, or less than 10 per cent of the investment in feeder mains.

There is obviously no general rule than can be laid down as applicable to all cities. In a recent study for a city where topography is such that strategically located reservoir storage could be provided within the area served by the distribution system, the provision of storage sufficient to provide for both domestic peaks and fire requirements cost approximately 30 per cent of the investment in feeder mains, and less than the expenditures required without storage for the proper reinforcement of the feeder main system. Certainly in any city in which feeder main capacity is inadequate, a study should be made of the relationship between storage and additional feeder mains.

Loss in Carrying Capacity

Another factor which has had a large effect on distribution system design has been the necessity of anticipating a loss in carrying capacity with the passage of time. The extent of this loss was evaluated by Edgar K. Wilson (Jour. A.W.W.A. 28: 9: 1304) in which he showed that for midwestern waters in general the Hazen-Williams coefficient decreased from 130 when new to 100 in about 20 years, a loss averaging more than 1 per cent per year. If the loss in carrying capacity were reflected in a comparable loss in valuation, this would be equivalent to a per capita loss of approximately $10.00 in a 20-year period, or 50¢ per capita per year, or nearly 10 per cent of the gross revenues of the average water utility. Fortunately this loss in carrying capacity is not correspondingly reflected in value. It is practicable to restore the carrying capacity to substantially its initial value by cleaning at a cost, taking the average distribution system, of approximately 5 per cent of the cost of the pipe installed new. Cleaning of an entire system is seldom, if ever, resorted to. When main cleaning is done it is usually confined to the feeder and circulating pipes where the relation of cleaning to installation cost is even less than 5 per cent.

This loss of capacity, however, is a serious indictment of the water works industry. Certainly some method of protecting so large a proportion of

the total water works investment should be available at reasonable cost. It is rather surprising that the heavier cement linings have not been more largely adopted. The cost of heavy cement lining varies from 6½¢ per ft. for 6-in. pipe to 26¢ per ft. for 20-in. pipe, equivalent to approximately 5 per cent of the cost of the pipe installed. If its use will maintain the carrying capacity of pipe, as seems probable in most cases, its cost is well justified. Many designers have figured pipe sizes using Hazen-Williams coefficient of 100 instead of 130, in anticipation of loss in capacity. The cost of this excess capacity exceeds that of cement lining. Cement lining costs about the same as one cleaning but is better because it maintains capacity whereas cleaning periodically restores it.

Data regarding the maintenance of the coefficient of carrying capacity of cement-lined pipe are not so plentiful as for tar-coated pipe. The Cast Iron Pipe Research Association endeavored to secure such data by testing 42 cement-lined cast-iron pipe lines in 12 cities located principally in the active or tuberculating water areas. All but 8 of these mains had been in service from 10 to 16 years. The Hazen-Williams coefficient varied from 131 to 153, indicating little if any loss in coefficient value. Had these mains been tar-coated it is believed the coefficient would have approximated 110. *It is believed that pipe protection and carrying capacity should be as permanent as the cast iron itself.*

The failure to adopt this improved coating would appear to result from the average water works man's opinion that cast-iron mains with the usual tar coatings can be used in hard water areas without deterioration in carrying capacity. It is believed that by and large that is not the case. It is suggested that prior to the beginning of any important expansion of a distribution system, comprehensive flow tests be run and the relation between years of service and the Hazen-Williams coefficient be determined. If the loss is at all material, consideration of heavy cement lining is suggested.

Unaccounted for Water

There has been a greatly increased interest in "unaccounted for water" in recent years. As recent as 15 years ago, the average completely metered well-administered water works accounted for less than 75 per cent of the water used. At the present time that percentage is about 85 per cent with a very few cities exceeding 90 per cent. One city of approximately 150,000 people, which had been completely metered for 40 years, was accounting for but slightly more than 60 per cent of the water pumped. By careful attention to its meters, their repair and accuracy of registration at low flows particularly, the accounted for water in this system has now been brought up to 83 per cent. The utility is now being paid for 35 per cent more water than before the improved meter maintenance program was started. The principal change was to see that all meters would register the low flows.

It is believed that the most important factor in reducing the quantity of water unaccounted for is the careful maintenance and repair of meters with particular emphasis placed upon the accuracy of registration at low flows. Instead of referring to 15–25 per cent unaccounted for water, it has been suggested by Kuranz that the unaccounted for water be visualized in terms of the

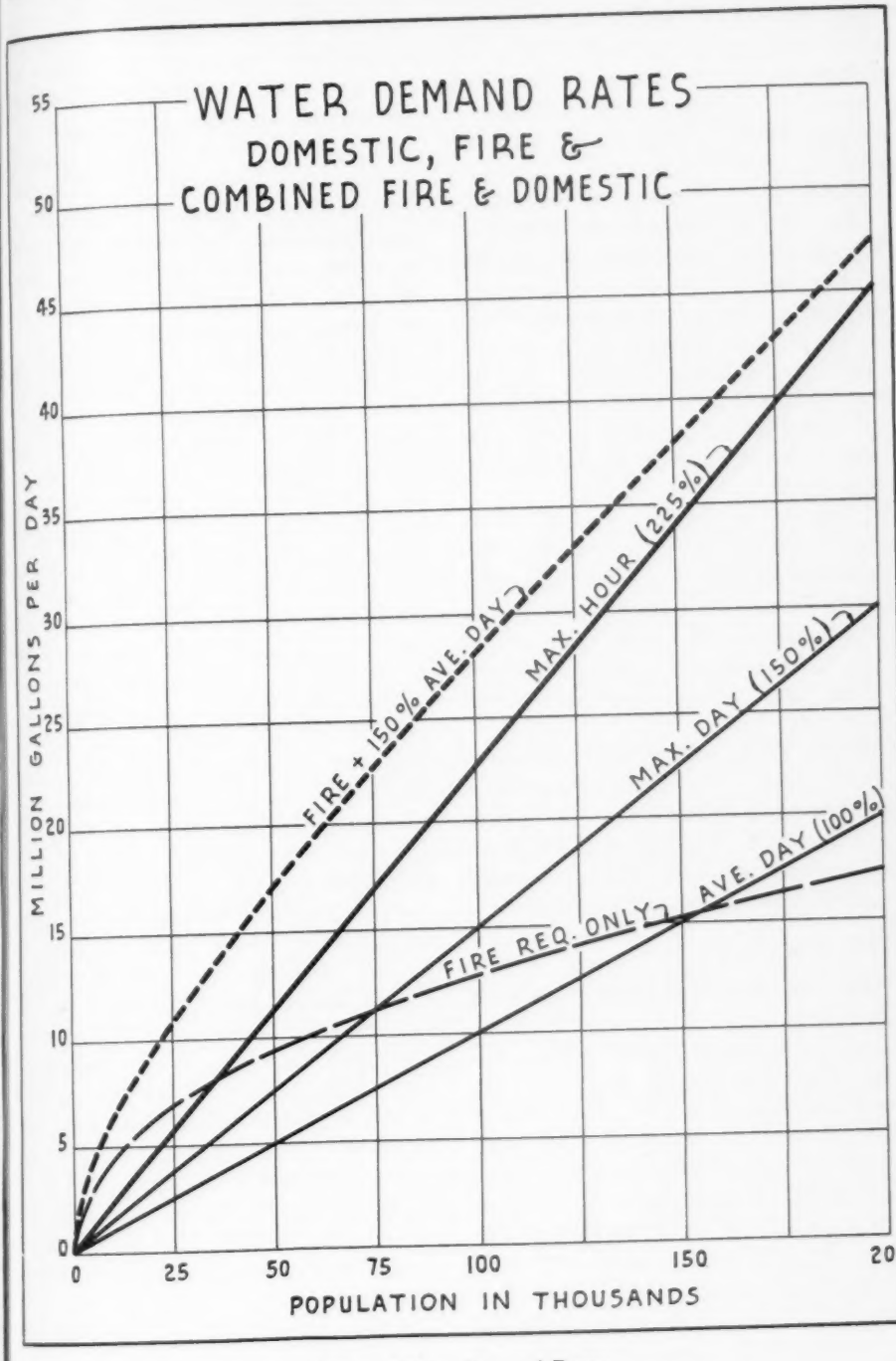

FIG. 3. Water Demand Rates

equivalent waste of 2 to 3 mo. coal, power and chemicals each year. In Kuranz's own plant, he has reduced the unaccounted for water to less than 7 per cent, an illustration of what can be done.

Water waste control requires, however, more than attention to the meters. It includes the necessity of locating leaks promptly and repairing them immediately. Every facility must be used to locate the hidden leaks, such as watching for melted spots on the streets during periods of light snow and listening at meters, valves and hydrants when routine inspections are being made.

Every meter should have a case history recorded on a card available for inspection at any time. On this card should be recorded, in addition to the manufacturer's data, the date of all repairs, replacements, maintenance and testing and the expenditures made therefor.

Meters should be owned by the utility rather than by the consumer, and the repairs should be made by and at the utility's expense. It is the utility's cash register and its maintenance is the responsibility of the utility.

Hydrants

Hydrants should be inspected at least twice each year, at which times they should be operated and checked for the operation of the drip, free draining, condition of packing, etc. They should also be carefully inspected after each use in the cold weather months. Each hydrant too should have a card on which should be recorded everything done to the hydrant, including each semi-annual inspection and what was observed at that time. Such a record is invaluable, in case an attempt is made to fix liability for a non-operative hydrant which may result from an attempt to open in the wrong direction, mishandling or some other cause.

It is good practice to install hydrants further back from the curb than was formerly the practice before the use of the automobile became so universal. It is also good practice to have a shut-off gate valve on every hydrant connection.

Hydrants should never be operated by other than the fire department or water works employees. The occasional use of fire hydrants to fill sprinkling wagons and to flush sewers and streets is bad practice. It jeopardizes the ability of the water system to function when most needed. In one city where hydrant wrenches were too freely distributed the annual cost of maintenance and repair was over $8 per hydrant as compared to an average of less than $3, and the number of hydrants replaced in proportion to those in use was double that of other cities where the use of hydrants was properly restricted.

Valves

Valves should be inspected at regular intervals. If all valves do not open in the same direction all exceptions should be recorded and their existence emphasized. Every valve should have a number and a card on which pertinent data relative to its location, installation, repair and maintenance are included. All valves should be provided with means of access and it is good practice to install valves 12 in. and larger in vaults. Packing of valves should be inspected and adjusted when necessary.

Valves should be spaced at intervals of 500–800 ft. and so placed that no

break will take more than two blocks of pipe out of service.

Distribution Maps

Too many water works either have no adequate map records or they are not kept up to date. A wall map of such scale as to make it useable should be available. The wall map will necessarily be of a smaller scale and show less detail for large cities.

There should also be a sectional atlas of the entire pipe system on sheets about 24 in. × 36 in. and scale of 50 ft. or 100 ft. to the inch with intersections and other congested areas enlarged when necessary.

Summary

The distribution system is, in effect, the arterial system of the water works. Like the human circulatory system it must be proportioned for the service, be sufficiently flexible to meet emergencies, safe against breakage and reasonably free from obstructions to flow which result in increased pressure. Let us have better pipe protection and less tendency toward low water pressure and high blood pressure.

Transportation Tax. The Federal Transportation tax of 3 per cent, and 4 cents per ton tax on the transportation of coal, could formerly be taken by state and local governments only in case they paid the tax directly to the carrier. Under the terms of a recent law introduced as HR–3338, a specific exemption from these transportation taxes is granted whether the freight is paid to the carrier or to an intermediate vendor. The change became effective about December 1, 1943.

Some Factors Entering Into the Determination of Water Rates

By J. P. Schwada and E. F. Tanghe

OVER a long period of years the Milwaukee Water Works has been involved periodically in rate litigation before the Public Service Commission and in the courts, because certain consumers believed that the utility was enjoying too high a rate of return or because, as a class of consumers, they believed their rates should be reduced. Prior to the last proceeding, considerable time was spent in establishing the overall return to which the utility was entitled by determining certain items, such as the rate base, depreciation, cost of operation and maintenance, and working capital. Little constructive effort was made to determine how much of the total revenue was to be produced by the suburbs and by each of the various classes of consumers within the city. It appears that rate schedules were established more or less arbitrarily following the pattern in common usage and with little consideration given to the cost of serving the different classes.

In the latest action before the Public Service Commission, the city attempted to obtain a nominal overall return and a schedule of rates that would reflect an equitable distribution of costs between the suburbs and the city and a fair division of costs between the classes of consumers within the city. It believed the suburbs should not expect service at the same prices charged residents of the city and contended that it had a legal right to include a lower rate of return in the rates to local consumers. Consequently it was confronted with a problem involving the use of the water works property by the suburbs and the city. With this in mind, many field surveys and studies were made to obtain certain pertinent information. A few highlights of this work and the conclusions drawn will be briefly discussed.

Viewpoint of Complainants

The complainants in the recent case were the suburbs and several of the large industries within the city. Each presented a viewpoint favorable to its particular interest. One suburb took the position that it should be given a very favorable rate because it used a relatively large amount of water and was located near the pumping station. Another suburb contended it was entitled to a lower rate because it purchased a large quantity of water, even though it was located at quite some distance from the pumping station. It also maintained that only a very

A paper presented on October 19, 1943, at the Wisconsin Section Meeting, Milwaukee, Wis., by J. P. Schwada, City Engineer and E. F. Tanghe, Research Engineer, Milwaukee Water Works.

small part of certain feeder mains should be considered in determining its cost of water because the same mains were utilized by the city in serving local consumers at a more distant point. This suburb further contended that the cost of mains allocated to it should not exceed that of the smallest single main that would deliver the quantity of water used.

Some of the large industries took the position that they should be given a very favorable rate because they purchased large quantities of water. The industries pointed out also that the city had installed a booster station and elevated tanks to meet the evening peak largely created by sprinkling during the summer months, maintained that they were not responsible for this high demand, and, therefore, should not be charged for any portion of the structures installed to supply it.

Viewpoint of City

Upon analyzing the viewpoints of the complainants, the city took the position that there are several factors which contribute to the cost of service inside and outside its boundaries and that these should be considered in establishing rates. The city realized that an attempt to determine the cost of service to each and every consumer would be prohibitive, would mean individual rates, and would be impractical. It believed that the best approach was to establish two major classes, namely general and fire protection. The general class was then subdivided into urban and suburban with the urban consumers grouped as industrial, commercial, and domestic. The fire protection class was subdivided into public and private.

Among the factors which the city emphasized are: (a) a peak factor based on a consumer's peak and average use of water (b) a distance factor which involves the distance from the pumping station to a consumer (c) the annual growth in consumption of the suburbs and the city (d) the water lost in the distribution system (e) the duplicate mains and reserve capacity.

Some of these factors are such that they could be given direct consideration in allocating costs to the suburbs, while the others could be used to more equitably distribute the cost of service to consumers within the city.

Peak and Average Use of Water

The original water works was completed in 1874, and since that time additions have been made periodically until today it includes two intakes, a filtration plant, tunnels, two major pumping stations, a distribution system with a booster station and two elevated tanks in the high pressure area, and an elevated reservoir in the low pressure area. At the present time the utility is serving the city, some county institutions outside the city, and several suburbs. The large industries within the city are about equally distributed between the high and low pressure areas.

A study of the water works and the several factors mentioned led to the conclusion that, for the purpose of determining costs, the property should be divided into two parts, one from the lake end of the intakes to the discharge end of the pumps, and the other from the discharge end of the pumps to the consumers. The capacity and cost of that part of the property up to the discharge end of the pumps is primarily dependent upon the peak demand in consumption, while the capacity and cost of that part beyond the discharge end of the pumps

is primarily dependent upon both the peak demand in consumption and the distances from the pumping stations to the various consumers.

It is, therefore, apparent that the ratio of peak to average use of water by a consumer is important in determining the cost of service, especially if the consumer's peak coincides with the system's peak. One customer using a certain quantity of water per month or quarter may take it at a fairly uniform rate or during the system's off-peak periods. Another customer may take the same quantity of water during the same period of time but may take it primarily during times of peak demand on the system. Obviously, the cost of supplying service to both consumers is not the same.

Checking Water Consumption

To obtain the required information on the water consuming habits of all consumers would have required the installation of graphic recording meters on all services, but since the quantity of water purchased by most customers of the utility would not justify this expense, a limited number of studies were made. In the case of the suburbs portable recording pitometers were used and were on the lines supplying the suburbs all summer. In the case of the large industries, portable graphic recording meters were used, and a week's continuous record was obtained for each industry. Plant engineers also assisted the city by taking hourly meter readings over a two-week period. In addition, the biweekly meter readings of the industries' consumption taken by the city were available.

Some very important information relative to the use of water by the suburbs was obtained, particularly in the case of the suburb that contended it was entitled to a very favorable rate because it purchased large quantities of water annually and was located near the pumping station. A recording pitometer placed on the line supplying this suburb showed that its peak demand was 3 per cent of the utility's peak demand and more than nine times its average use. The amount of water used by this suburb was about 1 per cent of the water sold annually. The utility's peak demand was three times its average use.

In this instance, then, a suburb purchased only 1 per cent of the water sold annually but during the utility's period of peak demand required more than 3 per cent of the facilities from the lake end of the intake up to the discharge end of the pumps, except those facilities held in reserve for emergency and future growth. Furthermore, had the distance from the pumping station to the suburb been equal to the weighted average distance of all consumers from the station, instead of two-thirds the distance, it would have required 3 per cent of the total capacity in feeder mains beyond the discharge end of the pumps and, therefore, 3 per cent of the investment in mains. In other words, up to the discharge end of the pumps this suburb required three times the capacity per unit quantity of water it purchased as was required by all consumers of the utility. Beyond the discharge end of the pumps it required also three times the pipe capacity per unit quantity of water required by all consumers but used it only for two-thirds the distance required by all consumers.

Similar ratios of peak to average use were obtained in the case of the other suburbs and used to obtain the cost of furnishing water.

The surveys made by the city relative to the combined use of water by a large group of industries selected by the complainants provided data which revealed some important information. The meter readings taken at all plants each hour during a two-week period made it possible to determine the peak hourly rate of consumption and the maximum daily rate of consumption during that time, and for convenience and without penalizing the industries, these unit rates of consumption were considered as the maximum for the year. The bi-weekly meter readings taken regularly at these plants throughout the year by the city made it possible to determine the peak two weeks' rate of consumption. Additional records kept by the city on the annual consumption of these industries also made it possible to determine the average hourly rate of consumption, the average daily and average two weeks' rates of consumption. The records of consumption for the utility as a whole continually maintained by the city further made it possible to determine the peak and average hourly rates of consumption, the peak and average daily rates of consumption, and the peak and average two weeks' rates of consumption for all the consumers.

Ratio of Consumption

The data on rates of consumption for the industries and the utility disclosed that the ratio of the peak hourly to average hourly rate of use exceeded that same ratio for the utility. The ratio of peak daily to average daily rate of use and the ratio of the peak two weeks' to average two weeks' rate of use also exceeded the same ratios for the combined use of all the consumers. Had it been practicable to obtain the rate of consumption for each hour and each day of the year for the industries, it is very likely that some of the ratios would have been higher.

The next step was to consider the use made of the water works by the industries. To what extent were the industries using the property because of their peak rates of consumption? Were the industries justified in objecting to any portion of the cost of the elevated tanks and booster stations?

The city is divided into two pressure areas, and the utility has installed two elevated tanks and a booster station in the high pressure area and an elevated reservoir in the low pressure area. The peak demand in the high pressure area occurred in the evening, and in the low pressure area in the morning. The large industries were about equally divided between the two areas.

A study of the demand curves for the industries disclosed that their peak demand occurred regularly in the morning in both pressure areas. Therefore, while about one-half of the industries did not have a peak demand that coincided with the utility's peak demand in the high pressure area, the other half did contribute and, in fact, created the peak in the low pressure area in the morning. This condition was clearly illustrated by curves showing the rates of pumpage on a peak day for the system as a whole, and for the rates of pumpage for the high pressure and low pressure areas. These pumpage curves differed from the curves showing consumption because during off-peak periods some water was going into storage and during peak periods out of storage and showed how the property excluding

the storage was used on a day of peak consumption and maximum daily demand.

The pumpage curves for the peak day showed that for the system as a whole the pumpage did not vary appreciably between 8:00 a.m. and 8:00 p.m. Obviously the sprinkling load between 4:00 p.m. and 8:00 p.m. on the entire system was almost being met by the storage. The pumpage rate for the high pressure area alone did increase appreciably between 4:00 p.m. and 8:00 p.m. because of the sprinkling load, but in the low pressure area the pumpage rate was uniformly high from 8:00 a.m. to 4:00 p.m. and then dropped after that time in spite of any sprinkling in that area. This latter pumpage curve together with the consumption curve and demand curves of the industries showed that the elevated reservoir in the low pressure area played a large part in meeting the peak load of the industries in that area.

Still further information was obtained from a study of the distribution system. In some places the utility had installed large mains for the sole use of certain industries. In other places mains had been enlarged to serve them adequately. The cost of the mains installed for the sole benefit of some industries alone exceeded the cost of the elevated tanks and booster station in the high pressure area.

Unfortunately, the data obtained on the peak hourly and the peak daily demand of industries were not obtained on a day of maximum demand and peak hourly consumption for the utility as a whole and, therefore, could not be used to allocate costs directly, as in the case of the suburbs.

The fact still remains, however, that the industries as a group and in comparison to the other consumers are getting a large benefit of the water works both up to and beyond the discharge end of the pumps. These industries purchase about 30 per cent of the water sold annually, and in taking this water with ratios of peak to average use higher than those for the utility as a whole, are getting a large benefit from both the equipment and the feeder mains.

Peak Demand in High Pressure Areas

When the city contended that peak demands should be considered in allocating fixed charges on the property up to the discharge end of the pumps and also on the property beyond the discharge end of the pumps, the suburbs pointed out that they receive service by way of the high pressure area and maintained that this should be recognized in the apportionment of water works property and the allocation of fixed charges, if this principle was to apply. Consequently the Commission apportioned the property between the high and low pressure areas both up to and beyond the discharge end of the pumps. Next, it made a study of the peak demands in the high service area and in the low service area. The peak demand in the high service area and the peak demands of the several suburbs together with the apportionment of property to the high pressure area made it possible for the Commission to consider the question raised by the suburbs.

Distance Factor

A second factor which materially affects the cost of serving a consumer is the distance from the pumping station to the consumer. Obviously, it costs more to serve a distant consumer

than it does to serve one near the pumping station, and distance should, therefore, be reflected in the distributing costs, such as the fixed charges and maintenance costs on the feeder mains, and particularly so in the case of the suburbs. A consumer located two miles from the pumping station will require a water main at least as large and twice as long as one needed to supply a similar consumer one mile from the station. As a matter of fact, friction and leakage will reduce the pressure and the amount of water to the distant consumer.

In order properly to consider the item of distance and arrive at a practical method of allocating the cost of distribution, several studies were made. These included distances from the pumping station to consumers, size and costs of mains, quantities of water delivered, and average and peak demands. It was concluded that for all practical purposes the cost of distribution for two consumers having like water consuming habits should vary directly as their distances from the pumping stations.

The distance factor employed by the city in its analyses of the cost of distribution is, therefore, based upon the relation of the distance of any one consumer to the weighted average distance all the water travels in the feeder mains. One distance factor was determined for each of the suburbs and one for the group of large industries.

For accounting purposes the city is divided into meter blocks of two to four city blocks. The quantity of water consumed in each meter block in one year was multiplied by its distance from the pumping station as measured along the feeder mains delivering water to that meter block. The sum of the individual products thus obtained was then divided by the total quantity of water sold to obtain the weighted average distance the water travels in the feeder mains. All consumers were considered in this study including the suburbs whose meters are located at the city limits.

The weighted average distance water travels to the several large industries concerned in the litigation, was obtained in like manner and the distance to each suburb was measured along the feeder mains supplying it. The distance factor attributed to the industries and each suburb was then determined by dividing their respective distances by the weighted average distance for the utility as a whole.

These distance factors for the suburbs were used to modify the average cost of distribution per unit quantity of water.

Distance Factor for High Pressure Area

In addition to determining the weighted average distance for the utility or rather the distribution system as a whole, the city made a determination of the weighted average distance the water travels in the high service area. This weighted distance and the distance to each suburb made it possible also to obtain distance factors for each suburb on the basis of the high pressure area alone. These factors together with the apportionment of the distribution system between the high pressure and low pressure areas made it possible for the Commission to give further consideration to the contention raised by the suburbs, namely, that they receive service by way of the high service area and not by way of the system as a whole.

Annual Growth in Demand

Consideration was also given to the annual growth in water demand by the suburbs. A water works system must be designed to meet anticipated future demands and, consequently, at all times there must be an excess or reserve capacity in the pumping or filtration plants, distribution system, or other facilities for this purpose. It is obviously uneconomical and practically impossible to increase the pumps or main capacity each year to supply the annual growth in demand. The portion of the plant held in reserve for future use may represent a substantial investment, and it is reasonable to expect all consumers of the utility to share fairly in this cost.

Studies of the growth in demand in the individual suburbs being supplied by the Milwaukee Water Works revealed that in each instance the rate of growth exceeded that within the City of Milwaukee. This fact indicated that the capacities being held in reserve for growth in the demand of the suburbs was proportionately larger than that required for the city. Consequently, the city took the position that the annual growth in demand should be considered in allocating the reserve capacities between the suburbs and the city.

Water Lost in Distribution System

Another item which is often overlooked, but one which should be considered, is the water lost in the distribution system. All of the water which is pumped at the pumping stations is not delivered to consumers through meters. A small portion of the unmetered water is sold to the city and other users on a flat rate basis. However, approximately twenty per cent of the water pumped in Milwaukee is non-revenue producing, it being lost through leaky joints, pipe breaks and faulty registration of meters or used in testing and flushing of mains and various maintenance needs. Non-revenue water is a necessary factor in the operation of the utility and cannot be attributed to any one consumer or group of consumers. Since this water never reaches the consumers' meters, it is obvious that a unit cost based upon the amount of water pumped is inadequate when applied to the metered use by a consumer. Consequently, cost of pumping, purifying, and distributing the non-revenue water which is used for purposes of operation or lost between the pumping station and the consumer should be reflected in a higher unit charge for metered water.

The suburbs in the recent rate case contended that a unit charge which included an allowance for non-revenue water penalized them because much of the leakage, a major component of non-revenue water, was from service lines and branches supplying some 100,000 consumers within the city. It is a definitely established fact, however, that no system of distribution mains and feeders is water-tight. Leakage occurs essentially through the joints in the pipe, and the lineal feet of joints in the services is comparatively small in relation to the total length of joints in the distribution system. It is practically impossible to determine the percentage of leakage accurately, and it may vary materially in different systems and under different conditions. However, that portion of the water pumped which is non-revenue producing can be determined accurately, and the city believed that the suburbs should bear a reasonable portion of its cost.

Duplicate Mains and Reserve Capacity

The city also emphasized the importance of continuity of service as afforded by the gridiron system because some of the suburbs contended that only certain mains should be recognized in determining the cost of distribution. A study of the number, location, and length of service interruptions in the feeder mains was made to show how often the suburbs benefited by being supplied from a duplicate main when the normal flow was disrupted. This was done by plotting the locations of the interruptions on a map showing the mains and by tabulating specific information, such as the time, size of main, location, and cause of interruption for a three-year period. The information thus obtained showed very clearly the value of the gridiron system in providing continuity of service in the distribution system.

The information further showed that in many instances, when more than one feeder main was out of service, the water must have taken a circuitous path and even passed through small mains to provide service. Consequently, the city concluded that all the feeder mains should be included in computing the cost of distribution to each of the suburbs.

In addition to providing duplicate mains, the city has also provided excess capacity in some of them. It has also provided excess or reserve capacity in the filter plant, pumping units, and storage. This additional capacity provides not only for emergencies but also for growth in consumption within the city and in the suburbs. The cost of the duplicate mains and the excess capacity in mains should be borne by the consumers including the suburbs.

Conclusions Drawn

On the basis of the studies made it was concluded that the peak factors of the suburbs and the city should be given consideration in apportioning fixed charges on the property up to the discharge end of the pumps. Some of this property, including structures, boiler plant equipment, pumping equipment and purification system, is actually used during periods of peak demand, and logically the fixed charges on that portion should be apportioned between the suburbs and the city on the basis of the contribution of each to the peak demand. That part of the property which is not in use at that time (the excess or reserve capacity) was equipped for emergencies in case of breakdowns and to meet the growth in demand of both the suburbs and the city. In the absence of any better method it was decided that the fixed charges on this part of the property should also be similarly apportioned.

Reserve Capacity

If each suburb operated its own plant, intake, pumping station, and filtration plant, excess or reserve capacity would be required and provided; it could not get along without it. Therefore, since the city is providing reserve capacity for the suburbs, each should bear its proper share of the fixed charges on the property up to the discharge end of the pumps. There appears to be no sound reason why these charges should be borne by the city alone.

It was also concluded that the peak factor and distance factor should be considered in apportioning fixed charges on the property beyond the discharge end of the pumps. When a distribution system is properly de-

signed, its feeder mains are made large enough to deliver water at satisfactory pressures to all consumers under peak load conditions. These mains must have additional capacity to meet the growth in demand of the suburbs and the city. In addition, there must be still more capacity in duplicate mains to provide service when breaks in other mains occur.

It is true that, when the entire distribution system is intact, all mains are not used to their fullest capacity during periods of peak demand. However, when a feeder main in one location breaks, an additional load is thrown upon another main or several other mains. Then, too, when the demand of a suburb or the demand of a certain class of consumers increases, that demand is provided by the excess or reserve capacity. If it is not available, a new main with excess capacity is laid to provide the service required.

Providing this excess or reserve capacity in the feeder mains means investing additional funds which add to the cost of supplying service. This additional cost (as well as the cost of the capacities used during periods of peak demand) should be borne by all the consumers, and in the absence of any better method, it is believed that the fixed charges on the distribution system should first be apportioned on the basis of peak demands. This means applying the peak factor to the average cost per unit of water pumped.

It was also concluded that the fixed charges on the distribution system should further be modified by using the distance factors which, as previously shown, take into consideration the distance from the pumping station to the consumer and the weighted average distance the water travels from the pumping stations to all consumers of the utility. This factor recognizes the fact that it costs more to distribute water to a distant consumer than to a consumer near the pumping station under peak load conditions.

If the city had obtained data on peak demands of the several industries on the day of maximum demand for the utility as a whole, it would have been in a position to use this same method in apportioning within the city the fixed charges allocated to it. In the absence of this the city could only use the data it obtained to show that the large industries were not entitled to a preferential water rate simply because they used large quantities of water.

Rate Adjustments

It may be contended that the relation between the peak demands of a group of consumers or the suburbs and the peak demands of the utility as a whole may be unusual and may not again be obtained over a period of years. Rate schedules are not established each year and it is believed that, if suitable provisions are made, sufficient data can be gathered over a period of years that will enable the utility or authorities to make a fair and proper adjustment for unusual conditions.

It was further concluded that the cost of water to the suburbs and the consumers within the city should include an allowance for the water lost in the distribution system. Obviously the cost of pumping, purifying, and transmitting this water should be borne by the consumers of the utility. The problem then arose of allocating a fair share to the suburbs and the city.

In its own study the city determined the average unit costs on the basis of total quantity of water pumped and also on the basis of total quantity of

water sold and maintained that a reasonable figure for the suburbs would be between the two. In line with this the Public Service Commission decided that the suburbs' share of the water lost in the distribution system would equal 10 per cent of the amount of water purchased by the suburbs. Consequently, the consumers within the city had to bear the difference between the amount allocated to the suburbs and the total amount lost in the distribution system which, as previously indicated, amounted to about 20 per cent of the water pumped.

Determining Cost of Service

In every rate case there are several major items established to determine the total annual cost of water service. These are the return to the utility, depreciation and taxes which are classed as fixed charges, and the cost of operation and maintenance which is called the operating expense. In considering a proper division of these costs, it is suggested that the various components be grouped as follows: (a) Consumer or special costs which are incurred irrespective of the quantity or rate of use of water (b) Demand costs which are primarily fixed charges on size of plant needed to meet the peak requirements (c) Output costs which are mainly the operating costs entailed in pumping, purifying, and delivering the water to the consumers.

Having eliminated those items which are not used by all classes of consumers and items whose fixed charges do not vary directly with peak demand and distance the water must be conveyed, it is possible to determine the average cost of getting the water up to the discharge end of the pumps and the average cost of getting the water from the discharge end of the pumps through the feeder mains to the consumer. When reducing these costs to a per unit basis, it must be remembered that, due to water lost, all water pumped is not sold. The cost per unit of water sold will be higher than the cost per unit of water pumped, depending upon the allowance made for the water lost.

Factors Altering Fixed Charges

The two factors which alter the fixed charges portion of these average costs for a particular consumer are the variation from the aggregate peak to average use of water and the variation from the weighted average distance the water travels from the pumping station to the consumers of the utility. Thus, if a suburb's peak demand is 5 per cent of the utility's peak, then its contribution to the utility's fixed charges on the property up to the discharge end of the pumps should be 5 per cent. The suburb's contribution to the fixed charges on the property beyond the pumping station would also be 5 per cent modified by its distance factor.

It is also suggested that all items which are used exclusively by one class of consumer, such as hydrants and hydrant connections, be eliminated from this compilation. Such items as meters, service pipes, office equipment, meter repair building, stock and garage buildings, which may be apportioned directly or on a quantity of water used basis, should be eliminated. Furthermore, if small diameter mains in the system are considered as distributors instead of feeders, these, too, should be omitted from the compilation and their costs apportioned directly to the local consumer on a street frontage basis or on a potential peak demand basis.

The operating charges, for the most part, may be apportioned on a "quantity of *water used*" basis. Meter reading, billing, and the collection costs of one consumer probably do not vary much from those of another consumer. "Maintenance of meter" costs probably depend upon the size of meter as well as upon the quantity of water used and the rate of use. The total of all operating costs which cannot readily be apportioned amounts to a very insignificant per cent of the total cost of service, and if these costs were to be omitted entirely in the apportionment, scarcely any reduction in the unit costs would ensue.

Time does not permit going into all of the various phases of the rate case, nor listing all of the questions raised. Needless to say, getting the water rates to reflect the cost of service is not a simple matter. Establishing a rate base, determining depreciation rates, fixing a proper sum for taxes, including the correct items for operating charges, and determining the rate of return are all preliminary to the job of getting a proper division of the overall costs so that each class of consumer, in the rates, will approximately contribute his reasonable and just proportion of the utility's costs. No rate schedule could be designed which would permit each consumer to pay exactly what it costs to serve him unless, possibly, individual rates were adopted. But every attempt should be made to have the rate schedule designed so that the consumer, collectively in his class, pays the utility according to the expense of serving him. The schedule adopted by one city is not necessarily the correct schedule for another utility. Local conditions and local costs should be the governing factors.

Appendix

Following the presentation of th above paper, questions were raised co cerning the consideration given by th Public Service Commission to the va ious factors in the general rate cas Also requested was an expression o the attitude of the courts toward th principles advanced by the city. I answer to these questions and servi also more fully to complete the pape there is included herewith a brief di cussion of the opinions expressed b both bodies.

The city has on two occasions pr sented its viewpoint—*first,* before th Public Service Commission in the ge eral rate case; and *second,* before th Circuit Court of Milwaukee Coun in litigation with a suburb supplied b the Milwaukee Water Works. In th first instance the Public Service Com mission's staff gave credence to th factors presented by the city, but th Commission in its opinion and orde partially discounted their considerati by the liberal use of a so-called "judg ment factor." The Commission's us of the judgment factor and its meth ods of grouping and summarizing va ious items of cost render it practicall impossible to determine accurately th recognition given to the several fa tors contributing to the cost of servic In the second instance, in which th city brought suit against a suburb fo additional compensation for servic rendered, the court upheld the city' viewpoint in every respect by recog nizing the peak factor, the distan factor and the other items of cost pr sented for consideration. This cou decision was rendered subsequent t that of the Public Service Commi sion, and the Commission's opini and order were available to the cou in pronouncing judgment.

General Rate Case

The complaint which inaugurated the general rate case was filed with the Public Service Commission on May 15, 1933. The final opinion and order of the Commission was issued under date of Oct. 2, 1939—more than six years later. During this period of litigation numerous studies were made by the city and exhibits were submitted, among them some pertaining to the factors upon which, in our opinion, the cost of service should be predicated. The recognition accorded these factors by the Commission and its staff, can best be expressed by reference to its written opinion and order.

Apportionment of Plant and Equipment

The Commission followed, in general, the basic principles propounded by the city in its division of property between the three major classes of service supplied, namely, fire protection service, urban general service and suburban resale service. After an audit of the utility's books, it proceeded, as did the city, to consider the property to be divided into two parts; one up to the discharge end of the pumps, and the other beyond the discharge end of the pumps. It apportioned the property to the major classes of service on the basis of maximum demands and capacity requirements, after a previous division between the high and low service areas. There is, however, a substantial disagreement in the costs as determined by the city and the Commission. This variance, in the opinion of the city, results from improper use of factual data by the Commission, from erroneous assumptions and from the use of judgment factors which produce answers not necessarily based upon pertinent data. Consequently, we are unable to state with any degree of accuracy, the extent to which the Commission considered the factors of cost as discussed in this paper. However, the following comments and quotations from the order of the Public Service Commission indicate in general its consideration of the above factors in determining costs.

Peak Demands and Distances

The city's viewpoint and the Commission's recognition thereof are briefly stated in the following:

"Respondent (city) has contended that peak demands and the distances water is carried should be given predominant weight. Our allocations give consideration to these criticisms."

The use of peak demands and distance for purposes of allocation are indicated in this statement:

"The high service capacity costs were allocated on a peak-hour-demand basis with minimum fire demands for the suburbs based on the so-called Freeman's formula, the high service demands being weighted for distances involved." In this connection it should be mentioned that the Commission used the requirements of the National Board of Fire Underwriters in determining the fire demands of the city.

The Commission staff's recognition of the distance factor is shown in the following statement:

"Studies by the staff show that the distance factor does materially affect costs. To determine the effects upon costs of the varying distance of suburban customers from the source of supply, the staff used a weighted index factor in its cost allocations. In constructing this index, the distance of each such customer from the pumping

stations was determined in relation to the distance water traveled to the average urban customer in the high service area using 4.7 miles as the base of 100. These indexes, weighted by the demands of each suburb, were used as a basis for allocating capacity costs and fixed charges to suburban resale and county customers. The staff used distance in the high service area as a base rather than in the high and low service areas combined which the respondent used, because the suburban customers were served entirely from the high service system. Comparison with cost estimates excluding the effect of distance indicates that, using the staff's method, relative distances account for about $60,000 of the annual costs apportioned to the suburbs when distance is given full weight."

The Commission discounted to some extent the findings of both its own staff and the city on the subject of distance as evidenced by the following:

"Although we have given some weight to distance in our cost apportionments, we have not given it full weight to the extent just mentioned or to the extent claimed by the respondent."

"Although some weight is given to distance in our cost estimates, this principle should not be carried to the point of determining rates for each suburb separately giving effect to the distance of each from the source of supply. Under present-day operating conditions separate rates for each suburban resale user, depending on distance from source of supply, do not appear feasible or equitable. Some of the suburbs find this acceptable; others do not. The respondent has recommended a uniform suburban rate."

The following excerpts from the Commission's order relate to its attitude on the influence of peak demands upon cost apportionments to the suburbs:

"Staff studies indicate that relative peak demands have less influence on costs than does the distance factor."

"The cost apportionments made by our staff have been on the peak responsibility basis. Respondent, however, increased the fixed charges assigned to the suburbs by development of a multiplier reflecting (1) the distance water traveled from the pumping station to each suburb in comparison with the average distance water traveled in the city as a whole and (2) the ratios of peak to average hour demand for each suburb in comparison with this ratio for the combined high and low service systems of the city. The staff used the actual peak demand data for each suburb and the high-service area in the city in assigning capacity costs to the suburbs."

"Accordingly, although peak demands have been used in apportioning costs to the suburbs, the costs which we find applicable thereto and the rate schedule based thereon give little weight to this factor."

The Commission, after having stated in several instances that peak demands and distance are important in ascertaining costs and have been given consideration in their determinations, arrive at a so-called "judgment figure" of cost of supplying the suburbs as expressed herein:

"We lack a detailed segregation of the plant and equipment used for suburban service. This is inherently difficult because the facilities involved are largely used jointly for both city and suburban general and fire-protection service. For lack of better data we have had to use the apportionment methods already described."

"We recognize the possibilities of error in these methods. For example, we are inclined to think the methods of allocating costs tend to overestimate the capacity costs and fixed charges assigned to the suburbs. This arises largely through the estimate of the effect of distance upon costs and the peak demands used. On the other hand the losses assignable to the suburbs may have been slightly underestimated."

"In recognition of the possibilities of overestimates and underestimates by use of all the methods resulting in the above estimates, we have arrived at a judgment figure of $290,000 as representing the reasonable normal cost of supplying the suburbs and county institutions with filtered water for resale to general users and with fire-protection service."

The methods employed by the Commission in obtaining a judgment figure of $290,000 per yr. as representing the cost of serving the suburbs, are not revealed. Elsewhere in the order are determinations of suburban costs by the Commission in the amounts of $291,894 unweighted for distance factor, and $319,115 with one-half weight for distance factor. Giving the distance factor full weight would indicate an annual cost of $346,336 by the Commission's figures.

Thus, the results obtained by the Commission are largely arbitrary and cannot be analyzed to determine the extent to which the city's factors were utilized in arriving at the final amounts.

Circuit Court Case

The case in the Milwaukee County Circuit Court involving the City of Milwaukee and a suburb supplied by the Milwaukee Water Works resulted in complete and conclusive acceptance by a court of law of the city's method of determining costs. This action was initiated by the city in an attempt to collect additional rates from the suburb for service rendered over a period of almost ten years. The case hinged on the ability of the city to prove cost of service in accordance with its claim for additional compensation. The case presented to the court by the city was based on the same principles, methods and data as those before the Public Service Commission. The court's judgment in this matter is best expressed by quoting from its finding.

"In furnishing water to consumers, their peak to average use and their distance and elevation from the pumping stations are important. The West Allis meter pits are about 7.3 miles from the pumping stations. This is 1.75 times the average distance to consumers in the entire system and 1.55 times the average distance to consumers in the high service area."

"That the Milwaukee Water Utility has no investment in any equipment made to exclusively serve the City of West Allis, and that West Allis is served via the same system of mains and by use of the same equipment as serves a large number of other customers. It is not practicable to segregate any particular part of the Milwaukee Utility investment as having been made solely because of the service to West Allis, and that the average cost of delivering water to all of the consumers of the utility, and more particularly to those customers who are within the high service area, is a proper and helpful factor, when adjusted by the application of other pertinent factors, in the ascertainment of the fair and reasonable value of the service to West Allis during the periods in suit. Some factors are stated in Finding 8."

(Finding 8 is the preceding paragraph.)

"It would not be practicable or reasonable to segregate any specific part of the Utility's distribution system or mains, or of its equpiment, in or of the high service area either up to, or beyond, the discharge end of pumps and to find that the portion so set aside was used or useful solely for the defendant (West Allis) and that the remainder was used or useful only for other customers of the Utility. Proper deductions for mains and equipment used or useful solely for the low service system were considered carefully in solving the issue in this action as to the fair and reasonable value of the service to defendant (West Allis) for the period of time involved in this litigation."

"There may be a different charge between residents of the plaintiff city and outsiders as to water furnished. No discriminating results from the rates charged and received by plaintiff from resident consumers on the one hand and those herein found to be the reasonable value of the service rendered by plaintiff to defendant on the other hand, during the respective periods stated in findings 41 and 42. Many other non-special contract consumers of the Milwaukee Water Works paid 10 cents and 9 cents per 100 cubic feet for the water furnished them, which rates correspond with those sued for in this action. West Allis will not be discriminated against by the finding or determination with respect of the reasonable values during the periods in suit as set forth in the foregoing findings. The differential between the rates to city consumers and defendant West Allis is justified under all the facts and circumstances established by the evidence in the case."

Summary

This expresses briefly the attitude of judicial bodies on the two occasions when the factors discussed in this paper as being essential in determining costs of service, were presented. The Circuit Court decision is a complete acceptance of the city's methods. The Public Service Commission order, while accepting the basic principles of the city's procedure, does not arrive at results satisfactory to the city for reasons mentioned heretofore. Plans to have the Commission's order reviewed by the courts have been postponed indefinitely because of the war. There is a possibility that this case may be reopened in the future.

The authors are grateful to Mr. Harry Breimeister, Senior Engineer of the Water Department, for his suggestions and help in the preparation of this paper and appendix.

Social Security Legislation

By Dale L. Maffitt

THE present Congress has made no change in social security legislation. As water works men, we are interested in the development of the federal social security legislation because we are employers and employees, and as such are directly concerned with the problems of unemployment and old-age retirement.

Municipally-owned water works plants were specifically exempted from participation in the original social security program, an exemption written into the bill because it was thought that it would be unconstitutional for the federal government to tax a state government or its political subdivisions. Since there are approximately 13,000 water plants in the United States serving 85 per cent of the population and at least 65 per cent are municipally-owned, it is apparent that the employees operating these plants should be considered.

The Social Security Act is administered by the Social Security Board, and one of the duties of the Board is to study possible ways and means of improving and extending the present provisions of the Social Security Act. As administrative experience increases, and as more data become available, the law may be broadened to cover additional needs as they develop. It is our duty as water works men to study federal, state and local legislation relating to social security, in order that we may secure for our employees the same assurance of protection that the Social Security Act of the federal government gives to employees of independent industry and commerce.

It may be that participation in the federal plan should be our goal. If so, the question of constitutionality is a major issue, and the one way to determine this is for Congress to extend the coverage to state and municipal employees, and through a test case have the courts decide whether or not it *is* constitutional. It may be that retirement systems designed to meet local needs, authorized through enabling legislation of the various states, are the correct solution to the problem. In either case the matter will not just work itself out. Organized planning and organized activity will be necessary if legislation of any kind is to be secured.

Perhaps there may be value in reviewing the history of the social security law, and also to study individual retirement plans which exist under state legislation.

The term "social security" is comparatively new. Yet, it is a goal toward which the people of this country

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A paper presented June 16, 1943, at the Cleveland Conference, by Dale L. Maffitt, General Manager, Des Moines Water Works, Des Moines, Iowa.

have been working ever since we became a nation. Workmen's compensation laws, child labor laws, trade union agreements, labor legislation,—all have developed as our nation has expanded in industry; and all are designed to protect the individual from want and discrimination.

For many years pension systems have been in operation for the benefit of employees in certain fields, and in many states there have been special funds for the help of needy children and the blind.

The first step toward a definite national social security program was taken in 1934, when a committee on economic security was appointed by the President. Experts on social, civic, and economic problems were assembled, and the Social Security Act as passed by Congress August 14, 1935, was based on this committee's report and on further study by Congress.

The Act provided for old-age and survivors' insurance, administered by the federal government, and offered states federal cooperation in nine federal-state programs: unemployment insurance; aid to needy aged, needy blind, and dependent children; services for maternal and child health; child welfare; the treatment of crippled children; public health; and vocational rehabilitation.

The old-age insurance and the unemployment insurance features of the law called for payroll taxes which were based on actuarial estimates of the probable cost of administering the law and providing benefits, and established in fact a national system of insurance. Certain types of employment were exempted from participation, including agricultural labor, domestic service, certain services of seamen, service performed in the employ of the United States Government, or in the employ of a state or political subdivision thereof, and service performed in the employ of a charitable or religious institution.

Suggestions for Expansion of Social Security

During the period since the enactment of the Social Security Act, the problem of old-age dependency in this country has been studied more thoroughly than in any other period in our history. In 1939 Congress amended the Social Security Act by extending its scope. The amendments provide that old-age insurance benefits be paid earlier, provide more liberal benefits and keep payroll taxes at the 1939 level. Coverage is extended to certain bank employees, seamen, and wage earners over 65 years of age.

Mr. Arthur J. Altmeyer, chairman of the Social Security Board, in a statement before the Ways and Means Committee of the House of Representatives of the 76th Congress, relative to the Social Security Act amendments of 1939, with special reference to employees of state and local governments said: ". . . no method has yet been worked out which would meet the constitutional questions involved and protect the system against adverse selection. The Board does, however, suggest that the present exception be modified so as to apply only to employees of state and local governments and of instrumentalities so owned.

"A number of state and municipal officers have been interested in the possibility of bringing in all local government workers, and the Board is continuing to study the problem with the hope that some method can be worked out."

Dr. J. Frederic Dewhurst, economist representing the Committee on Old-age Security of the Twentieth Century Fund, New York City, presented certain recommendations for amendments to the Social Security Act before the House Ways and Means Committee February 22, 1939. His report stated: "Employees of states and municipalities, whose salaries are constitutionally exempt from taxation by the federal government, cannot now be included in the federal old-age benefit system. Many of these, it is true, are covered by separate state and local retirement plans, already in existence. The suggestion has been made that, although the federal government cannot tax the states as employers, nor the wages paid to their employees, the states could elect and contract to have all their employees covered by the system, if such choice were specifically permitted under the Act. An amendment to the Act providing for this choice would enable state employees to be protected, without the necessity for 48 separate state systems, and would enable them to change from public to private work without loss of their benefit rights.

". . . The committee recommends, therefore, that provisions be made to permit states to elect to have their employees permanently included in the federal old-age benefits system, and that states that do not so elect protect their employees through state civil service retirement plans."

The House Ways and Means Committee did not include this suggestion in their recommendations to Congress, but it is an idea that might be developed for future amendment to the Social Security Act.

On March 12, 1943, Mr. Altmeyer delivered an address on "Needed Changes and Expansion of Social Security" before the National Conference of Social Work, in New York City. This address was printed in the appendix of the Congressional Record March 16, 1943.

Mr. Altmeyer's discussion touched on all phases of the social security program. His suggestions had to do with broadening the whole field of social security to include insurance against wage loss through total disability, sickness and non-industrial accidents, and to provide medical care. He also suggested that the federal-state program of unemployment and compensation insurance should be combined into a single, comprehensive federal system of contributory social insurance. If a single social insurance system were adopted, covering all the hazards mentioned, it would become increasingly desirable and necessary that coverage under the system be extended as widely as possible. He made no mention, however, of extending coverage to employees of states or their instrumentalities.

In connection with expanding the social security program while we are engaged in the prosecution of the war, Mr. Altmeyer says, ". . . unless action is taken now, there is grave danger that the post-war period will arrive before a well-rounded social security system can be put into successful operation. A successful social security system cannot be improvised overnight.

"As a matter of fact, the extension of social security now would not only *not* interfere with *but would greatly aid* in the successful prosecution of the war. The greater sense of security which would result would make the people of this great nation more effective defenders of democracy. This has been amply demonstrated in Great

Britain, where social security was extended even while the bombers roared overhead, and where it is now proposed that there be far greater extension."

Survey of the System in England

In England, a comprehensive survey of existing social insurance has been made by the Inter-departmental Committee on Social Insurance and Allied Services, and the report of Sir William Beveridge, chairman of the committee, became a best-seller the afternoon it was published. Space does not permit an analysis of this report, but its main feature is a "scheme of social insurance against interruption and destruction of earning power and for special expenditure arising at birth, marriage or death."

The scheme embodies six fundamental principles:

(1) Flat rate of subsistence benefit irrespective of the amount of earnings interrupted by unemployment or disability or ended by retirement.

(2) Flat rate of compulsory contribution from each insured person or employer, irrespective of means.

(3) Unification of administrative responsibility, each insured person making a single weekly contribution in respect to all his benefits, and each locality having a security office able to deal with claims of every kind.

(4) Adequacy of benefit. The flat rate of benefit proposed is intended to be sufficient, without further resources, to provide the minimum income needed for subsistence in all normal cases.

(5) Comprehensiveness. It should cover every general or uniform risk that justifies social insurance.

(6) Classification. Social insurance must take account of different ways of life of different sections of the community. From the point of view of social security, the people of Britain fall into six main classes: employees, others gainfully occupied, housewives, others of working age, below working age, retired above working age. Under "classification," social insurance must be adjusted to the differing circumstances of these classes.

This proposed plan is much more comprehensive in purpose than the American plan of social security, and differs from it in underlying theory and detail. A fundamental of the Beveridge scheme is equal contributions, regardless of earnings, and equal benefits, irrespective of need. In our system the cost of social insurance is borne by contributions based on earnings, and the benefits have a general relativity to contributions, without a needs or means test. Under the Beveridge plan all benefits are equal, and designed to provide subsistence, depending on class, and regardless of former salary. Benefits are comparatively lower than under our system but are spread out to cover everyone —man, woman and child, from "the cradle to the grave."

On May 23, 1943, Edward R. Murrow, radio commentator in London, stated in a news broadcast that recently an attempt had been made to establish, by action of Parliament, a system of socialized medicine in line with suggestions in the Beveridge plan; however, vigorous protest from the medical profession had resulted in the suggestion being dropped. Thus the first attempt to put into effect even one phase of the Beveridge plan has resulted in failure.

Under our system, the old-age retirement insurance is administered by the federal government, and the unemployment insurance and other fea-

tures of the Social Security Act are administered jointly by the federal and state governments. The Beveridge plan proposes that all features of social insurance and public assistance be administered through one central office, with contributions for all insurance being combined in one tax. As noted above, Mr. Altmeyer, of our Social Security Board, suggests that our federal-state program be combined into a single, comprehensive federal system of contributory social insurance, in order to achieve a maximum degree of simplicity and efficiency in the operation of our system.

Social Security Accepted Goal

The Beveridge plan is in the theory stage. The American plan of social security is still new and in the process of change. It is too early in its growth and application to draw definite conclusions as to which features are good and which are not. Social security, however, is an accepted goal of the democracies, and it is only through revision on the basis of experience that our system can grow to fulfill the American ideal of what social security should be.

As water works men, we are interested in the development of social security because we feel we are entitled to the same security from the hazards of unemployment and old age as are other members of society. Changes will have to be made in our national program before we are included as a group in its benefits.

In the meantime, some progress has been made in various states in the effort to provide pension or retirement systems for water works employees. A brief study of a few of these plans should stimulate interest in our problem.

According to Mr. Leon A. Smith, superintendent of the water department of the city of Madison, Wis., three cities in Wisconsin—Madison, Milwaukee, and Waukesha—have pension systems in effect covering water works employees.

In 1936, the Board of Water Commissioners of Madison adopted a resolution fixing wages of water department employees, including a pension system as part of the wage, effective January 1, 1937. Pension payments are made monthly, beginning on the first day of the month following the attainment of age 65. For each year of membership, the contributing employee will receive an annual pension of 2½ per cent of his salary during such year. The employee's contribution is 3½ per cent of his salary.

The city of Milwaukee adopted the provisions of an act passed at the 1937 session of the legislature of Wisconsin, which provided for the establishment of a retirement system for city employees who were not contributors to, or participants in, any other retirement fund. The system, effective January 1, 1938, provides service or old-age retirement allowances to employees retiring after reaching age 60, retirement allowances to employees who become disabled before becoming eligible for service retirement, death benefits upon death in active service, and benefits upon separation from service. Each employee who becomes a member of the plan is required to contribute to the system a certain percentage of his salary, fixed according to sex and age at the time of becoming a member. In general, the retirement allowance is equal to approximately 1/70 of the average compensation received by the employee during his last five years of service;

that is, 1/70 of his final average salary, multiplied by the number of years he has been a member of the system.

The city of Waukesha, Wis., has a salary savings plan for the employees of the Waukesha water utility, under which an annuity policy is purchased by each employee from an insurance company. The employee pays $5.00 a month premium by salary deduction, and further executes an assignment of the annuity policy to the Waukesha water utility, under certain conditions set out in the resolution authorizing the plan.

The water utility pays $10.00 premium for each employee per month, as long as the employee contributes his share of $5.00. Benefits under the policy are payable to the employee at age 65, provided he is still an employee of the company. In the event said employee dies while in the employ of the Waukesha water utility, benefits are payable to a designated beneficiary, or if the employee leaves the company for any reason before age 65, certain cash settlements are made.

Mr. W. C. Staeffler, general manager of the Manitowoc public utilities, recently informed us that the Wisconsin League of Municipalities sponsored a retirement system bill, which was adopted by the 1943 Wisconsin legislature, and was signed by the governor on May 20, 1943. The act provides for a state pension plan for municipalities, employee contributions and benefits to be administered by a five-man board appointed by the governor. The act will permit all cities in Wisconsin, except the city of Milwaukee, that desire to do so, to establish pension systems for all city employees except policemen, firemen, and teachers, who are included in previous retirement fund legislation.

Types of benefits available to participating employees under the provisions of the plan include retirement annuities, disability annuities, death benefits, and separation benefits. The standard of retirement benefits proposed is a life annuity, payable monthly of 50 per cent of final rate of earnings, for retirement at age 65 for an employee entering at age 30, with a minimum benefit of $10.00 per month. Separation benefits are allowed in case an employee leaves the service of all participating municipalities before his accumulated credits are sufficient to provide a $10.00 per month annuity. Participating employees are required to make normal contributions of 5 per cent of their total earnings from the participating municipalities. Each municipality participating in the plan will contribute an equal amount for current service; and will contribute an amount equal to the periodical payment required to amortize over a period of approximately 40 years the liability for prior service credits. Each municipality pays the costs of providing benefits for its own employees. Investment earnings and risks and mortality risks are averaged over the entire group.

Mr. Roger W. Esty, superintendent of the Danvers Water and Sewer Board, Danvers, Mass., informs us that a contributory pension law was passed in Massachusetts about five years ago, and seems to be working out satisfactorily for water works men. Employees contribute 5 per cent of wages and the town or city contributes a similar amount.

Procedure in the Southwest

Mr. Albert R. Davis, superintendent of water works at Austin, Texas, informs us that a number of the larger

cities in Texas have established pension systems. It has been necessary for each city to secure authority through the state legislature to amend the city charter to provide for the establishment of a pension system.

The procedure was so difficult and involved that the Texas legislature, on April 21, 1943, proposed an amendment to the constitution of the state of Texas which provides that cities and towns shall have the power and authority to set up systems of retirement and disability pensions for their employees, provided that no system be set up until it has been approved at an election by qualified voters. The proposed amendment also provides that the legislature shall have authority to provide a system of retirement and disability pensions for appointive officers and employees of cities and towns, to operate statewide or by districts, under such plan or program as the legislature shall direct, participation by cities and towns to be voluntary. This proposed amendment is to be submitted to vote of the qualified electors of the state at an election in November, 1944.

Special Bulletin F of the Municipal Finance Officers Association, published in January, 1943, describes state retirement plans for municipal employees of four different states; namely, Ohio, New York, California, and Illinois. Information is given concerning membership, contributions, benefits and administration.

The Ohio plan is compulsory for all local employees, while the plans in the other three states are available if municipalities want to use them.

It is noted that seventeen states in the United States have retirement systems for state government employees, and that ten states have adopted plans whereby employees of local governments, outside of metropolitan areas, may participate in state-wide retirement systems.

A bill was introduced in the Iowa legislature in February, 1943, which, if passed, would have authorized the establishment of pension and annuity retirement systems for employees other than policemen and firemen, in cities of 1,000 population, or more. According to the bill, the fund for the retirement system was to be created from:

(1) The proceeds of an assessment of such employees in the city or town, not exceeding one per cent of their salaries in a given year, or such greater percentage as the city council of such city or town might authorize, and a majority of such employees, at the time of such authorization by the city council, agree to pay;

(2) The proceeds of an annual tax levy, not exceeding the amount produced in the current year by the assessment of such employees, as provided above; and

(3) The interest on any permanent fund which might be created by gift, bequest, or otherwise.

The city council and two city employees, elected by ballot from employees of said city or town who would be entitled to participate in said pension fund, were to constitute the board of trustees, who would have the authority to formulate the plan of retirement, and make all necessary rules and regulations for the operation of the retirement system.

This bill did not pass, but it is the type of enabling legislation we must have if we are to establish our own retirement systems. It may be that the scope of the federal social security law will be broadened to include municipal employees, but it is not probable

that this will happen until after the war. Economic conditions then may be such that it will not be feasible to make a change. This is a time in which there is a high percentage of employment; it seems the ideal time to build retirement reserves.

The securing of social security for water works employees is a fair, nonpolitical undertaking, and we feel that the reason for not having the problem properly solved in all parts of the country is not on account of formidable action against any one group, such as water works men and women, but because of indifference, and lack of understanding of the problem as a whole. As representatives of the large group of water works employees, we should make every effort to avail ourselves of some measure of social security, either by constitutional amendment to bring us under the Social Security Act, or by enabling legislation of various states to permit state or individual systems of old-age insurance.

Water Works Manpower Survey—November 1943

A spot-check survey of manpower conditions as of the end of November 1943 has just been completed. Returns have been received from water utilities serving almost 14,000,000 persons, or one sixth of the water served population in U.S. cities.

These plants now average 1 employee per 1,500 persons served. They have lost 10 per cent of their employees since the beginning of 1940.

Approximately 6,000 former water works men are now in military service.

Of today's employee group approximately 72.5 per cent are men over 38, 16.1 per cent between 18 and 38 and 0.6 per cent are under 18 years of age. Women today make up 10.8 per cent of the employee total.

Almost three-fourths of the 18/38 group of men appear still to be in the 3A and 3B selective service groups and not yet reclassified by their draft boards. Any of these men holding critical positions in water plants should be protected by the immediate filing of form 42B with their local boards.

Be sure to read S.S. Memorandum 115B elsewhere in this issue.

The Public Utility Goes to School

By E. J. Rowe

THE position assigned this subject reminds me of a conversation I heard at a social function. A hungry-looking man was eating a sandwich. A friend asked him, "What kind of a sandwich are you eating?" He replied, "A very thin slice of nothing between two thick pieces of bread." It is possible that you will realize the full force of that comparison before I am through.

I come to you from a small community hidden away amid the hills and forests of Alleghany County—a community of approximately 6000 people. It is possible that some of you never heard of the place called Wellsville. Although we, of Wellsville, are isolated, and our contacts with the outside world few, we are a progressive people.

Time does not permit the enumeration of many practices and methods that have been in daily use in Wellsville but now abandoned as unnecessary and out-of-date—practices and methods that our modern day advanced thinkers are advocating. We, of Wellsville, are looking for something new.

A written description of the various approaches to the subject used by the Water and Light Department of Wellsville, especially the results obtained, would require a more extensive knowledge of English composition than possessed by some of its employees.

One perplexing problem confronting the operators of all public utilities is how to reach the public without seeming to indulge in propaganda. That word "propaganda" has been very much in the public limelight during the past few years. Almost any statement could be construed as propaganda.

How can the utility operator reach the public without creating the impression that he has some axe to grind? What method is available for the operator to use in explaining his every day problems without creating a suspicion that he is emphasizing his particular job? We know of a certain operator who utilizes every possible occasion to advance his idea of the importance of his individual job. We know that he has become a public nuisance and a "main street" joke. The average public utility operator desires to avoid any complications of this nature.

Many years of experience with the general public have taught us the futility of attempting to inoculate the average older taxpayer with new ideas. Public opinion may be defined as a "very delicate and precarious state of

A paper presented on October 1, 1943, at the New York Section Meeting, Binghamton, N.Y., by E. J. Rowe, Supt., Water and Light Dept., Wellsville, N.Y.

mind." All too often the reception tendered new suggestions and methods is "Grandfather's ideas are good enough for me." This attitude can be attributed to lack of knowledge and intimate contact with the problems of the utility operator. There are times when the taxpayer will accept present conditions rather than make an effort to determine the advantages to be gained by more modern methods and equipment. Projects are often judged from a "capital investment" viewpoint, instead of increased efficiency with attendant decreased operating costs, influenced no doubt, by barber shop gossip.

Over-coming and correcting this condition will require many years of carefully-planned endeavor by the utility operator. It is our opinion that the best and soundest approach to the problem is through the school children. Is it possible to create favorable public opinion through the instrumentality of the schools?

Progressive development of government, demands that we place our faith in that group of young people attending our schools, therefore, we must assist them to become conversant with its essentials. The role played by public utilities, especially water and sewerage, in the drama of life has become a vital constituent of government. *That is the premise upon which the water and light department of Wellsville has based its effort in introducing the public utilities to the schools.* Our experience with school children dates back quite a number of years; in fact about twenty. Our first attempt to introduce an educational program, based upon the problems of utility operation, into the schools was made shortly after a slow sand filter plant was superseded by mechanical filters. Frankly, it was our observation that the school authorities were reluctant, at that time, to approve the proposed plan. Today our efforts are welcomed with a display of enthusiasm, approaching gratitude. The proposal to construct a plant for the chemical treatment of water encountered well-organized opposition. After the plant was placed in service, the imagination of some consumers' over-ruled the dictates of such organs as palate and nose, detecting strange, objectionable tastes and odors. Over-coming this objection seemed to justify the inspection of the water treatment plant by the students, thereby, permitting the operators to tell their side of the story.

Arrangements were made with the school authorities to have each grade, starting with the eighth, visit the plant. At the time of these inspection trips the use of chemicals and the functions of the equipment was explained and demonstrated. The students were required, as a part of their school work, to write compositions based upon their observations. Liberal cash prizes were awarded for the best work in each grade. This plan met with immediate and cooperative response by the students. The original introduction of the public utility to the school had been made, but apparently had failed to attain the ultimate goal. The mechanics of instruction employed during the expansion of this program, and the results obtained, may be of interest. The various chemicals used in the plant were demonstrated by attaching small test tubes, containing weighed amounts of the respective chemical, to heavy white card board mounts. A brief explanation relative to the nature of the chemical, together with its purpose and action, was written in large

letters on the support, the descriptive statement being of this general character: "This is *filter alum* used to coagulate the raw water to produce the floc. This sample will treat 1000 gallons of water." Similar statements applicable to other chemicals were noted on the mount supporting the respective samples. Extreme care was exercised to demonstrate the exact amount of chemical applied to a given quantity of water. Colored water, having the characteristic appearance of chlorine, was sealed in test tubes and used as an indicator of the amount of chlorine applied to a given quantity of filtered water.

Display Methods

This method of showing the actual amounts of applied chemicals has proven of great value, as the average student is able to visualize the small quantities required and at the same time special emphasis is placed upon that particular factor, *quantity*. The display of chemicals is as near the respective point of application as possible, or at the machine through which it is fed.

Flasks containing fresh samples of untreated, coagulated, settled and filtered water mounted on a board painted white, in a well lighted place, illustrated the changing conditions in the water as it passed through the plant. Large containers with samples of wash water collected at the beginning, middle and end of wash periods proved effective in showing the amount of accumulated materials on the surface of the filters. During a number of years a portion of the exhibit—a miniature settling basin, constructed on a 50th scale, with glass sides and bottom—proved to be a point of common interest to both students and instructors.

Solid media plates planted with various samples of water always attracted interest with many questions from the students. Special agar plates to illustrate various microscopic forms, such as molds, air borne bacteria, etc., make an interesting display. The difference in appearance between sterile plates, broth tubes and those containing various samples was called to the attention of the visitors. Broth tubes containing different indicators planted with samples taken from cultures illustrated the formation of gas, etc.

So called "artificial samples" (materials taken from hand washings, samples from toilets, milk, etc., planted in broth tubes and on agar plates) have been used, but some doubt exists as to the actual value of such extended program considering the extra amount of work involved. Students have shown great interest in such samples, but it distracts the attention from the main subject of water treatment.

Water Meter Exhibit

A water meter with a section cut away exposing the working parts is always a most prominent exhibit. Charts showing the amount of water passing through a leak of a given size are available for distribution. Large colored drawings showing cross-sections of a typical filter plant assist materially in making explanations of the flow of water through the plant.

Expressed in brief, the above may be said to be *"instruction by 'seeing' rather than 'hearing.'"* "Experience is a good teacher" is an old saying. Profiting by our experience, we gradually expanded the scope of the program of introducing the public utilities to the schools. Employees visited the various class rooms giving illustrated lectures followed by personal

visits of inspection to the plant. During this period of experimentation the coverage of the subject was not as complete as desired. Something was lacking in the program, as it apparently failed to produce the desired results. The missing link seemed to be the failure to provide continuity of descriptive phraseology that could be used during successive years. Filling this gap required a written treatise, or bulletin, covering the entire subject of the local water supply system.

Bulletin Helpful

A mimeographed treatise, or bulletin, was prepared dealing with the history, organization, operation, together with a few statistics of the entire water supply system. The principle topics discussed in the treatise are as follows: Early World History of Water Supply; Early History of the Local Supply; Collection and Source; Transmission; Treatment; Washing Filters; Pumps; Auxiliary Equipment; Storage; Chemical Treatment; Chlorination; Distribution System; Summary of System; Organization Chart; Work Routine Chart; Purpose of Laboratory Work; Extent of Laboratory Routine; Interpretation of Results; Bacteriological Examination; Expression of Quantities; Amount of Chemicals Used; Electricity Used and Pumpage; Patrol and Protection of Water Shed; Care and Maintenance of Distribution System; Meter Reading; Maps and Records; Mathematics of Power; Selected Questions on the Text; Sketches (cross-sections of the plant, filters, distribution system, etc.).

Considerable space was devoted to a description of the chemical and bacteriological examination of the samples, especially, the frequency of sampling, together with comments relative to the physical effects of various constituents more commonly found in the local supply. The value of stressing the necessity of protecting the water shed, water in storage and the prevention of polluting the primary source of water has been demonstrated on several occasions. The first attempt to incorporate this volume of descriptive matter in one treatise, or bulletin, was made with some doubt as to its effectiveness. If too technical, it was thought the subject would be difficult for the average student to understand and would fail to retain his interest. While preparing the material for the treatise it became necessary that all technical terms be reduced to plain, understandable language—quite a problem for one whose ability is limited. We are glad to report that statements by the instructors of the classes using this material indicate that the average student completed the study in a satisfactory manner.

The school authorities assigned the treatise as the text for class room work covering a school week. The treatise demonstrated its worth by supplying a standard description of the plant and its operation. It may be worthy of mention that this idea is being expanded until it will include all branches of the local government: the governing body; municipal hospital; fire board; police department; garbage incinerator; street department; sewer system and disposal plant, as well as the water and light department.

Employee as Guide

One of our employees who has been designated "official guide and lecturer" offers the following comments: "We find that care should be exercised to insure that all material presented is uniform in content with that of pre-

vious years. If your story makes any impression some youngsters will be sure to tell about the plant to their younger brothers. A slightly different version when that younger brother visits you will be quickly noted to your distress."

We try to make our description casual and with references to familiar objects when describing equipment and processes. Sedimentation is pictured to them as the same thing as the sand bars forming in the adjoining stream. Chlorine disinfects because it is like iodine. Activated carbon is good for our water because a well-advertised gum containing it "sweetens the breath and cleans the teeth." Similar comparisons are used throughout the plant and understanding is thereby increased. All interesting equipment available not necessarily directly concerned with the general process described, is demonstrated: recording thermometer; fire alarm apparatus; precision balances; office equipment, and communication system.

Met on a friendly basis, these inquisitive, restless youngsters quickly repay such attention with their increased attention and interest.

The best judges of results, are the teachers or instructors supervising the students that are embraced within the program. We quote from a few of the letters in our files: "Visual education plays a very important part in our present educational system. This is a very valuable method employed by the public school teachers. The science teachers, along with using films, endeavor to construct miniature models to apply to each different subject that is studied. This is not always possible due to the complexity of the apparatus. Science teachers also visit the local industries. One of the most important subjects covered by all science teachers is the purification of water. This subject should be covered very completely. The most important factor that goes to make up a healthy community is its water system. The purification of water can be covered completely and at the same time educate the students to the latest modern methods and devices, by means of the science teacher arranging for field trips to the local plant with the co-operation of the officials in charge." (A. T. Perrone, Science Teacher.)

Another instructor, referring to the prepared material furnished to the school authorities said: "We feel that these outlines furnish a valuable teaching device, and made our trip to the plant of much greater value than it would otherwise have been." (Florence T. Maddren.)

The principal of the High School, D. H. Anderson, said: "In a bulletin of this type the writer often fails to consider the level of the reader, and consequently much material is included which has no meaning to the average citizen. I have asked the teachers if the ninth grade people experienced any difficulty in understanding material in this bulletin. Both are in agreement that all material can be understood by freshmen in high school and both feel that this bulletin has a real place in their ninth year science course."

Drawing upon our store of experience we can offer some advice as to procedure found to be most effective during inspection trips of the students when introducing the public utilities to the schools:

1. The use of personal pronouns should be restricted to the lowest possible limit.

2. It is not the work of the individual, but the use of equipment and plant facilities etc., and the results obtained therefrom that should be emphasized.

3. A simple, candid explanation of the causes and effects are far better than any lengthy technical apology.

4. One employee should be assigned for each particular phase of operation. That is, one employee will always lecture on the laboratory work, another will be assigned to the mechanical operation.

5. Dividing the students into smaller groups, with one section or group, inspecting the laboratory while the other is visiting the main operating floor, provides for better contact and avoids confusion.

6. Our earlier method of assigning a certain employee to guide his particular group throughout the plant resulted in creating different impressions. It is practically impossible for different employees to use the same phraseology, or wording, when explaining various phases of operation. Therefore, whenever one employee is assigned to the same place or phase for all groups the possibility of creating different impressions is remote.

7. Usually a limit is placed upon the total elapsed time for the visit. This must be broken up into periods for each phase of operation. This is not as difficult as it may appear, and it practically adjusts itself after a little experience.

8. Don't permit questions until the close of the lecture.

9. A standard written description of the processes and equipment is the most valuable instructing device available.

Summary

Close cooperation between the public and the utility officials promotes good will that will be of unestimable value during times of stress.

Contracting the public through the school authorities and those under their influence is one of the best avenues of approach to establish a lasting foundation for that Good Will.

Instructors welcome any assistance the utility official can render that will place subject matter of local interest within their sphere of influence.

The public utility official need not fear the students will treat the visit to the plant as a lark, or as an excuse for getting away from the class room. It has been found, invariably, the students will cooperate and apply the allotted time to their own advantage.

As proof of this, our files contain letters of appreciation written by students over a period of years.

Impressing upon the minds of the younger generation the fundamentals upon which all local government is founded, will return big dividends in the future. Don't forget they are the voters who will decide governmental policies in the future.

No doubt there is an unspoken question in the minds of some present. You may ask "Is it worth the time and trouble?" Judging by our experience the answer is an unqualified "Yes!"

Introduce the public utilities to the schools.

How Can a Fair Comparison of Water Rates be Made?

By W. Victor Weir

THIS discussion of rate comparisons started several months ago when a rate questionnaire was received by an American Water Works Association member. Instead of answering the questionnaire, he forwarded it to the Association office and asked whether it might not be within the province of the Association to collect rate information and related data, so that any future inquiries stemming from water rate studies could be referred to the Association office. Any person desiring information could quickly receive a complete tabulation of the data needed. He would not have to send out questionnaires to various water works. In turn, water works operators would not have the onerous task of repeatedly digging out various questionnaire answers, and in place of many questionnaires, the water works operator would fill out one comprehensive question list for the Association, and would refer any subsequent inquiries to the Association office.

The question of rate comparisons is a many sided one. I do not know who worded the subject of this discussion but he must have done it with his tongue in his cheek. You will note that he specified a *fair* comparison of rates, flouting the old saying that "comparisons are odious."

Water rate comparisons were probably begun when the second water works was put into operation, and will probably continue until all water is supplied on a free basis. Comparisons will be made by people who pay water bills and also by persons engaged in supplying water service. Ninety-nine out of each hundred rate comparisons are likely to be unfair. These comparisons will be unfair because a consumer will say his rates are too high since those in City X are lower, or a water superintendent will say his rates are right because those in City Y are higher. One water works director, who made an extensive rate study by sending out questionnaires, and then had accountants visit six water works comparable in size with his own, spending several days at each studying rate structures, operating and accounting procedures, etc., has stated: "As it is now, no two do business alike and, due to this fact, comparison of rates appears to me to be a waste of time." Many others have reached the same point of view, on the basis that differences cannot be properly evaluated, therefore rates should not be compared.

We all know that there should be considerable variations in water rates between cities, depending upon a great

A paper presented on June 16, 1943, at the Cleveland Conference by W. Victor Weir, Supt., St. Louis County Water Co., University City, Mo.

many factors, some of which are: methods of financing; payments of taxes; charges for fire protection; free water furnished; ownership of services; meters; debt charges; depreciation charges; type of service area; type of consumers; difficulty of serving area; purification costs; pumping costs; value of plant; impounding works; water sheds; types and sizes of mains; labor rates.

A comparison of water rates of several cities will show that the rates for a specific city are above or below the average, but cannot show that the rates of any specific city are too high or too low. Water works managers are generally agreed that a bare comparison of rates means little. Rate questionnaires sent out by water departments therefore ask for other information, with the idea that the related information will show whether the rates for a specific city should be above or below average rates.

I have studied several current rate comparison tabulations, and then studied annual reports of several of the water works involved, to see whether the conclusions to be drawn from the tabulations were in accord with the data shown in the annual reports. Frankly, the tabulations of water charges and related operating data often did not reflect the actual financial, operating and accounting practices, shown in the annual reports.

An effort to compare water rates between a few cities by weighing differences as shown in their annual reports was also fruitless, since most annual reports do not furnish enough data to allow fair comparisons to be made. This effort resulted in the conclusion that considerable basic data, beyond that usually included in comprehensive annual water department reports, would be necessary if rate comparisons are to be attempted.

Let us assume that all necessary financial and operating data could be obtained from a number of cities, and that we had time enough to study all such data. If we wanted to make operating cost comparisons; or comparisons of the methods of financing water main extensions; or comparisons of the amount of bonded indebtedness, etc., we could do so from the accumulated data. However, to make rate comparisons we would have to undertake considerable additional work. It would be necessary to determine the effect of each of these basic differences on the water rates, so that each of the water utilities could be placed on a comparable basis. This would be an intricate and involved job. The procedures to be followed would be devious if not impractical.

A study of complete data for a given water works might indicate whether or not the water rates for that utility were approximately correct. This step would be necessary in making a comparison of water rates. We do not want to compare our rates with those which are obviously too high in one city, or with rates which are just as plainly too low in another city. We thus run into the problem of establishing correct water rates in a given city, and there are many more than two schools of thought on this question.

The question of the total revenue which should be received must first be settled. Privately-owned utilities usually expect enough revenue to pay operating expenses, taxes, depreciation and a reasonable return on the invested capital. Municipally-owned utilities have many varied practices. Some expect revenue sufficient to take care

of capital expenditures, or to pay sizeable amounts to the general city treasury in lieu of taxes, or to support certain city institutions which have been improperly made the responsibility of the water department. Some expect revenue from the city treasury for the fire protection furnished.

Assuming that the correct amount of necessary revenue can be established, we then are confronted with the problem of how to obtain it. Water rates are established to divide the costs of rendering water service equitably between the consumers of water. There is little unanimity of opinion as to how this should be done. There are flat rates, meter rates, service charges, minimum charges, discounts and penalties. Fire protection charges may be high or low. There are one, two and three part meter rates.

Unfair Comparison

Flat rate water charges are not generally considered fair, but they have to be used in rate comparisons. Where flat rates are too cheap, meter rates must be too high. An example of the impropriety of flat rates has been given recently by T. J. Skinker, Water Commissioner of St. Louis. Meters have been installed on 235 service lines, but water bills are being rendered on a flat rate basis. In a three-year period the revenue received from individual consumers per 1000 gal. delivered has ranged from $.00413 to $10.90. The total flat rate revenue amounted to approximately half the amount which would have been received at established meter rates.

We must, however, determine for each city that the flat rates and the various blocks and charges in the meter rates are correctly established, if we are to make a comparison of the water charges in various cities. A popular comparison is to compare costs of water in various sized quantities, say for 2,000 gal., 10,000 gal., 100,000 gal., and 1,000,000 gal. per month. If City A, charges the small user less than it should, and City B, charges the small user more than it should, a comparison of rates or water costs to similar users in City C, is worthless. Each city may obtain the proper total revenue by in turn charging the large users more, or less, than they should properly pay. The same holds true between flat and meter rate consumers attached to the same water works system. One class will probably pay too much, while the other class pays too little. A comparison of water rate charges in one city as against water rate charges in another will be valueless, unless it is known that each rate is correctly established and equitable.

Let us assume, however foolish the assumption may be, that we are able to assemble all financial and operating data for a dozen cities of similar size; that we can properly correlate and weigh such data; that the total revenue obtained for each city is the proper amount; that the various blocks of the water rate schedules are correctly established. We are then in the position to make a "fair" comparison of water rates, probably for the first time in history.

When the fair rate comparison is made, two simple conclusions result from the mass of accumulated data; (1) each water company or water department makes a charge for water sold; and (2) some charge more than others. We cannot reach the conclusion that any of the rates are too high or too low since the comparison is based on the assumption that all rates are correct.

The procedures necessary to enable making a fair comparison of rates are quite formidable, and the conclusions to be drawn from the usual rate comparisons are essentially valueless if a fair comparison of rates is to be made. The courts, public service commissions, and other regulatory bodies therefore appear to be entirely correct in their refusal to give credence to rate comparisons in determining reasonableness of utility rates.

Water rate comparisons are usually made by a demagogue who does not particularly care to make a fair comparison, or by an essentially fair person who wishes to obtain information to establish the reasonableness of his own rates. Proper rates cannot, however, be established by comparisons. The same amount of effort spent in analyzing the factors going into the cost of operation of a specific water utility will go much further toward establishing the reasonableness of its rates. The use of comparisons to attack or justify water rates is, more often than not, an indication that the person using comparisons does not know how, or is afraid to use, a more acceptable, sound and, incidentally, a more ethical way of studying the reasonableness of rates.

Since a water superintendent may have rate comparisons used against him, it may be argued that it is necessary for him to make comparisons also. This does not follow, since by so doing he may only get into a bickering argument which could go on forever. His proper defense is a logical argument showing the futility and unfairness of rate comparisons. To make this point, he may require some specific information regarding the operations of other utilities, the rates of which have been used in a comparison, to show specifically why the rates of another utility should be both higher and lower than the rates of his own utility, thus indicating the uselessness of rate comparisons.

M. F. Hoffman *

Mr. Weir has covered the ground thoroughly to show that a fair comparison of water rates is practically impossible. This fact is emphasized by a ruling of the Federal Power Commission Trial Examiner as noted in the April, 1943, issue of the *Edison Electric Institute Bulletin* (p. 101). The following is quoted from this article: "The fairness or unfairness, reasonableness or unreasonableness, of rates, is not, as a matter of law in rate proceedings, determined in any such fashion as (by comparison) . . . "to make any comparison of evidentiary value, comparability of material and essential conditions would have to be shown all along the line, otherwise the comparison would mean nothing . . . What would that mean? It would mean, we would first have to enter upon a preliminary trial on the question of comparability. We would have to try first the question of comparability and make a determination as to whether or not the conditions were so substantially comparable as to make the evidence . . . of any evidentiary value and then after we did that there would be nothing to prevent you coming forward and wishing to make another comparison with another point and with another, and with another, and with another, advancing reasons just as sound as your first comparison.

"You could scarcely find two companies where all the material factors

* Commercial Supt., Dept. of Water Works, Cincinnati, O.

and the conditions were substantially so similar as to make a mere comparison of rates of any substantial evidentiary value. Each case ought to be determined fairly and correctly on its own facts, its own costs, its own operations, its own facilities, and it would not support or condemn a rate charge by one company to show that a similar rate, or one higher or one lower, was charged by another company."

Here is an opinion from an expert source, ruling out any attempt to justify a rate by comparison with that of another city. It is obvious that no advantage can be gained from any attempt to do this.

Water works executives, however, will continue to send out questionnaires for various reasons. Since it has been shown that they cannot be for the purpose of justifying a rate, then it must be to acquire information which would lead to matters of administrative policy. The problem then becomes one for each water department or company to set up its own report of operations and costs in such manner that a good picture may be drawn of the utility, so that a fair comparison is possible. In this picture the question of rates being equitable must be left out. The cost of operation together with other pertinent data such as supply, purification, distribution, area supplied, populations supplied, potential growth, condition of plant, bonded indebtedness, etc., are all vital factors in this problem.

The inconsistency in financial reports of cities was recognized some years ago by the Municipal Finance Officer's Association of the United States and Canada. This organization appointed a committee comprised of the most experienced nationally-known municipal finance men, with instructions to proceed on the standardization of municipal accounting so as to result in uniform reporting. Great strides have been made in this field. Municipal reports are now being issued which offer a very good basis for comparison of operating expenditures, and functions together with revenues, by classification.

Perhaps we in the water works field should follow this example. As Mr. Weir has stated, many water works departments and commissions issue bulky annual reports which do not give a basis for comparison with other cities of comparable size. Since the two Associations, the American Water Works Association and the Municipal Finance Officer's Association, have collaborated successfully in the preparation of the "Manual of Water Works Accounting," which has filled a long-standing need in the field of water works practice, it seems logical that the A.W.W.A. should attempt some degree of standardization of uniform reporting showing not only the financial operations of the department, but also such data applied to production. With this information it will be possible to analyze the rate structure for that city. It will also be possible to make a fair comparison of water works operations with other comparable cities, and give a line on whether rates are out of proportion or whether they are equitable.

C. M. McCord *

From time to time various newspapers and magazines make an effort to compare water rates of various cities by publishing the prevailing rates. They do not, and cannot, in most cases, set down just how the water properties are operated and they fail to disclose

* Director, Water Dept., Memphis, Tenn.

various sources of revenue. The result is a partial treatment of the subject, which could lead to nothing but an erroneous conclusion.

In all likelihood, one cannot find in the United States two large companies that carry on their business in a similar manner, derive revenue from the same sources and keep records in the same way. Due to the fact that their business policies vary, a real rate comparison would call for complete analyses of the operations. Some of the variables follow:

(1) In some cities all water mains, extensions and fire hydrants are paid for by the water department. In other cities the cost of installing water mains is borne by the property owners and, in other cases, charges are divided between the water department and the property owners in various ratios.

(2) In some cases fire hydrants are installed at the expense of the water department and maintained by the water department. In other cases fire hydrants are installed by fire department, maintained by fire department; while under other conditions hydrants are furnished by the fire department and installed and maintained at the expense of the water department. Mains of ample size for fire protection purposes are installed at great expense by some cities, while others pursue an entirely different policy. Reductions in insurance premiums in a community properly protected can amount to more than the total water bill of the community.

(3) Service connections for water mains are, in some instances, installed at the expense of the water department; whereas, in many cities, the customer pays for the cost of this installation. In some cases meters are paid for by the water department; in others, they are paid for by the property owners. Maintenance of meters is at the expense of the water department in some cases, and at the expense of the property owners in others.

(4) The cost of securing raw water is a wide variable. In some cases it is secured at very low expense; in others, expensive impounding reservoirs or purification plants and long transmission lines are necessary.

(5) In the treatment of water, expense in some cases is practically zero; in others, it amounts to more than the pumping cost of some cities.

(6) Some cities are so situated that water is supplied to them by gravity, eliminating entirely the cost of pumpage. In other localities, it is necessary to pump the water from one to four times.

(7) The treatment of the water department by the city in which it operates has a direct bearing on rates. In some cases the water department pays nothing into the city treasury but receives tax money from the city; in others the water department is required to pay a substantial sum, generally stated to be in lieu of taxes, to the city.

(8) Some water departments receive substantial payments from the city for furnishing water service to fire hydrants; others receive no such consideration. The

amount of free water given by some water departments amounts to an appreciable figure; in other cases it is relatively small. Some water departments receive a substantial income from fire protection charges and some none.

(9) The manner in which bonds have been issued and the retirement provisions and interest rates all have an important bearing on the cost of the water department's operations. In some cases these bonds are issued by the city and are paid for out of general tax funds. In other cases they are paid for out of the revenue of the water department. Some have been issued at very low interest rates and some have been issued at rates as high as six per cent.

(10) In the operation of some water departments an adequate reserve for depreciation is set up monthly and in such an organization the properties of the department are generally well maintained. In other cases such reserves are not provided for, and frequently maintenance suffers.

(11) The manner in which street repairs are handled varies greatly. In some cities the water department is charged rather liberally by the city for making repairs. In other cases the street repair work is handled by the water department itself.

It is evident from the foregoing statements that before a statement that one water department is charging more for its product than another could be made, it is necessary to make a complete investigation as to how the two departments do business, from what sources they receive revenue, compare their investment and maintenance costs and do many things that one not trained as an accountant would have great difficulty in doing. It is believed that if all necessary and pertinent information was furnished on two water departments, not one person in a thousand would be able to make use of the information and reach a correct conclusion.

Under these circumstances it would appear that the better thing to do would be to analyze the department in question, find out how much money it takes in and how the money is spent. If the business is sanely and sensibly operated and yet fails to take in sufficient money properly to maintain its property, take care of the bonded indebtedness and set aside reserve for depreciation, the rates are too low. On the other hand, if rates are such that all of these things can be done and still have a large sum of money left over at the end of each year, rates are such that they could be lowered.

If the profits are unduly large and the water company is privately-owned, the public has a real interest in such a situation. On the other hand, if the water company is municipally-owned and its funds are not wasted but properly applied to public usage, it is not of particular importance as to whether its profits are large or small. The real trouble with most municipal water departments is just exactly what you men know and what you are thinking: (a) public favor is courted by reduced rates; (b) the revenue of the department thus becomes insufficient; (c) the department is then placed on a hand-out basis and is not permitted to properly maintain and operate its property and prepare for the load ahead.

When rates only are considered,

some departments that are not making enough money to operate the plant are credited by the uninformed public for an economical operation that actually does not exist and the departments that enforces rates sufficient to carry on in a business-like way, without occasional or periodic hand-outs, are frequently criticised when actually they should be complimented.

What is to be gained by comparing the rates of a department operated on a starvation, hand-out basis, with the rates of a company that is properly functioning on a sound, clean-cut, above-the-board business policy? My contention is that until water departments do business alike and keep records alike, the mere comparison of rates is entirely misleading.

Revised Form WPB-2774

In the November, 1943 JOURNAL, members were advised that the revised Form WPB–2774, would be published in December. At the time the JOURNAL goes to press no official release of the new form has been received, and therefore it cannot be printed in this issue.

Labor Relations in the Public Water Supply Field

By James W. Irwin

MY knowledge of industrial relations in municipally-owned projects is limited to what I have been able to learn in pursuing my avocation of politics and my contacts with public servants.

Frankly, I don't think any industrial manager would envy the operator of a municipally-owned plant, because the man in private industry knows the pressure put upon managers of publicly-owned plants to hire the cousin of so and so, who happens to have political influence in the Fourth Ward, and to promote the brother-in-law of so and so, who happens to be the power behind the city hall.

In considering certain of your problems, I was struck with the difficulties you must face in long-range planning of your industrial relations because of the turnover that comes in your personnel when the "ins" become the "outs" and the "outs" become the "ins." This uncertainty of the future, which is in your own minds when you attempt to plan, is of course in the minds of your employes, because they know that their tenure of employment is based upon the attitude of the electorate in their respective communities and that they have no job security.

In addition to these problems, you face the constantly changing panorama of labor legislation, labor regulation by executive edict and labor regulation by bureaucratic interpretation, so that where you may be in compliance at noon you may be in non-compliance at sundown. As a matter of fact, it always amazes me that you men in public or private operating management, ever have any time to run your plants because of the pressure of industrial relations problems having very little to do, except from the efficiency standpoint, with actual operations.

In private industry we have similar problems, but we are relatively free of the one which is your most troublesome influence—political control.

I would suggest that the time is ripe for each of you to canvass your entire operation from the standpoint of working conditions, working policies, safety programs, pay schedules and other industrial relations matters, so that you can go into the labor market and recruit on a competitive basis with private enterprise.

Admittedly, the class of employe now available is not up to the par of two years ago. Industry is facing exactly the same problem in its recruiting activity that is faced by the armed services which now find physical rejects almost equal in percentage to passable applicants.

A paper presented on June 17, 1943, at the Cleveland Conference by James W. Irwin, Assistant to the President, Monsanto Chemical Company, St. Louis, Mo.

Private Industry Personnel

In private industry we constantly strive to maintain our plants on a basis that would be acceptable to us as managers if the positions were reversed, and we were working in the operating departments and the operating personnel were working in our offices.

This means constant inspection; it means daily contact with our line supervisory staffs so that we know what is going on. We must be always vigilant to make certain that the men and women in our employ have the best we can offer when competitive wage situations, product sales situations and all other factors are considered.

Industry attempts to establish its policies on the basis that if any given policy is such that we would hate to see it brought out in the open for public observation, that policy probably is wrong in whole or in part and should be modified or changed completely.

That means that we watch all of our activities so that private industry will be thought of as a good place to work, as a place where we demand value received for our payroll output, but nevertheless a place where an employe would like to see other members of his family work because he personally is sold on the conditions under which he puts in his eight hours a day, six days a week.

If a private plant manager were to take over your desk, I think he would start by making a detailed inspection of the plant as a prospective employe, starting at the employment office door. He would make mental notes on the way in which he was received by the plant policeman or by the employment office clerk, the physical setup of the employment office and whether or not it was clean and had an efficient appearance. He would note the courtesy with which he was interviewed by the personnel man or woman and the interest he or she took in the job for which he was being considered.

He would be interested most definitely in the service facilities provided for his welfare, such as the locker and shower room, the room or cafeteria in which he would eat his mid-shift meal, the medical supervision, and the instructions he obtained from the safety director of the plant.

The way in which he was introduced to his prospective foreman and the way his prospective foreman explained his job to him, would result in his favorable or unfavorable reaction.

He would be definitely interested in the details of the job and whether or not the work was clean and, if not (all operations cannot be clean) what steps were taken to see that he had available protective clothing, respirators, gas masks and the like.

Naturally he would be interested in knowing what his wage rate would be both at starting and as he became orientated on the job; how the wage compared with the wages paid employes of neighboring plants in the same community for similar work.

Employee Benefits

He would want to know what pension plans his employer offered, whether or not the employe contributed, and how much service would be required before he, as a new employe, would be eligible for participation.

Further, he would be very much interested in whether there was available a dismissal pay plan which would help him to become relocated if, after becoming a permanent employe, it was found that his job must be abolished or in a period of curtailment of operations that the working force must be

cut down. In private industry we have attempted to establish such policies to help employes through their period of unemployment.

He would be most interested in whether or not his employment rated a vacation with pay after a period of service and on what basis.

Industrial Relations and Labor Turnover

These are long-term industrial relations policies and the presence of them, or lack of them, has a most definite influence upon employe turnover; the feeling of security an employe has and how happy he will be in his job. They affect your ability to hold present employes and recruit new ones in boom times.

I can understand how the lack of many of these things is making it difficult for you now in the face of a growing shortage of manpower, to maintain a full operating staff.

I would imagine that the water works industry is one of the last to consider the employment of women, but it would seem to me that there is not a great difference between your operations and those of chemical plants with which I am familiar. We thought for a long time that it would be impossible to adapt our operations to the employment of women, but we learned, much to our advantage, that there are very few jobs in chemical operation which cannot be taken over by women and handled almost as efficiently as they were by men.

It is true that this departure from all-man operations to operations using both men and women requires quite a bit of study, because the psychology of women is a great deal different—more complicated and baffling—than the psychology of men. We have found in our plants, which now are using women successfully, that if plant managers, superintendents and line supervision, from department superintendents through foremen, are properly instructed in the beginning, it is relatively simple to bring women in and use them along with men in virtually all departments.

Don't forget, however, that the woman's viewpoint is important. There should be a woman on the executive staff of any operation, to guide and counsel operating management on the use of women and the problems that will arise when they are in your employ.

It has always been my feeling, and that of a great many men who have the same type of management responsibility that I have, that we have been remiss in not discussing more of our operation problems with our employes. If they knew in greater detail, the programs and policies we have set up to make their working conditions better, they might understand some of the things we cannot do and the reasons why we cannot do them.

A great many companies have found in the last several years that the preparation of employe handbooks outlining the policies is helpful; first, in the indoctrination of new employes in their first week or two on their new jobs; second, in helping older employes to remember some of the policies which have been set up.

These handbooks have helped to establish a link that had been misplaced because of fast growth and rapid turnover, which connected top management and operating personnel. I can recommend the use of such handbooks to all of you, no matter what the size of your plant. Your turnover is going to increase, you are going to

have more and more new employes to indoctrinate and the handbook helps to do this and to augment the personal face-to-face indoctrination course they go through with your personnel managers and departmental supervisors. visors.

Training Programs

Lack of proper training programs for your supervisory force can cause you a great many headaches. I cannot recommend too strongly that you carry on constantly, training classes for your foremen and superintendents so that they may be kept up-to-date on labor laws, safety, plant operation and all the other problems of day-by-day work in industry. If your supervisory force is properly trained your labor relations problems will begin to fall off. A good supervisory staff can handle many small grievances at source; or at least it can relay grievances to the proper management authorities within an operation so that they may be taken care of and thus prevent grievances from growing in employes' minds until they are not minor but major disagreements with management.

Too often under the pressure of increased production, reduced manpower, raw material shortages and maintenance troubles, supervisory training programs are suspended temporarily with the thought that they will be picked up again when things ease off. It has been my observation that things never ease off no matter how long we wait, that soon such programs have gone by the board and the quality of supervision begins to weaken.

I have not attempted to get into any of the legal problems of industrial relations because that subject in itself would require a week of your time and far greater knowledge than I have.

In private industry it has always been assumed that the men have a right to work or not to work as they see fit. This is particularly true in peacetime when, if they want to pull a strike to obtain some economic advantage, it is their right to strike.

Even in peacetime I do not believe employes of publicly-owned plants which are serving a community with an essential product, such as water, have any right to strike because of the effect upon community health and domestic activity.

However, I hope that in public plant operation there is some semblance of union responsibility where agreements made by a union are adhered to; where contracts are submitted to secret vote by the membership and not by vive voce vote; where those who are in disagreement with the union leadership can not be howled down so that whatever union leadership wants is stampeded insofar as approval is concerned.

I realize that I have covered only the high spots of this subject, but I hope that what has been said from the standpoint of the experience of private industry, may be of help to you.

Discussions

Charles J. Alfke *

Although a shock to most concerns that have had no previous experience with employee organizing activities, management has been required to give considerably more attention and constructive thought to employee relations policies than has been given them in the past.

* Exec. Vice-Pres., Hackensack Water Co., Weehawken, N.J.

In these days, policies covering relations with employees are wide and varied, and include among others: job classification; wage standardization; promotions; vacations; sick leave; pensions; workman's compensation; suggestions; training; starting and stopping time; group insurance; selective service; medical attention; and, of course, employing and discharging.

Many of us do not stop to think about the four most important divisions in a business, of which manpower is one. The remaining three are materials (including equipment), money, and methods. This may appear rather elementary, but I dare say few of us think of a business in this way. No one of the four can be neglected; least of all manpower.

Past and Present Employee Relations Problems

The federal government has, by legislation and regulation, made the matter of employee relations very trying and expensive to management and owners of businesses. Retroactive features have, in many cases, prolonged contract negotiations, and such retroactive features often present a financial problem. However, if it is the aim of management and owners of businesses to do a constructive job in recognizing the ambitions, problems, and difficulties of its employees, and if the aims of the national labor organizations are the same, the ensuing results should reflect mutual benefits and aid in maintaining smooth employee relations. It must be recognized that there is definitely an employee relations problem in every concern and every effort should be made to handle it properly.

Years back, when an individual put his own money into a business, directed and ran that business; or worked at a machine, and employed some men, he was known as an *entrepreneur*. He employed additional men as he needed them and had work for them; when he ceased to have work for them, he dispensed with their services. But the United States was small in those days. As the country grew business methods changed. We introduced the partnership method, and finally the corporation method. Many of us will remember the further step at the turn of the century when consolidations of corporations were carried out to form some of our largest corporations of today. From a method of doing business on a small scale where only a few people were employed, some of our corporations have grown until now they employ hundreds of thousands of people. The ownership of the large corporation is wide and scattered. To my mind, this method of doing business, involving as it does large numbers of employees, places a social obligation on the corporation with respect to the community as well as its employees, for should the corporation shut down for any length of time (it does not have to be for a long period of time) both its employees and the community are seriously affected. This was not the case years ago when it was understood by employee and employer, that a man worked only while work was available. Today business must consider the employee's problems, must find out what its employees have on their minds with relation to their jobs.

General

The foregoing outlines the employee problem as I see it. It might be interesting to this group to know that the Hackensack Water Company never

had a Personnel Department prior to the organizing activities among its employees a few years ago. I felt that a Personnel Department was necessary to handle employee problems properly. Just a few words about our Personnel Department. It has charge of carrying out all employee relations policies. A personnel director has, and must have, wide powers, and in our Company he is also Chairman of the Company committee which handles grievances of employees. Appointed 18 months ago, he now has three assistants and has in his custody a complete file showing the history of each of our employees and is acquainted with every job in the organization.

I have attempted to present, in an impartial manner, my opinion about employee organization. If you can see any good in it, retain the good and discard the bad, and perhaps the result may be quite desirable.

Walter S. Bryne *

The water works industry is, I am sure, deeply indebted to Mr. Irwin for his very erudite discussion of the problems of employee relationships, and especially as he presents it from the standpoint of privately-owned enterprise or utility.

We must recognize the fact that we have two separate forms of obligation as managers. Some of us are public officers responsible for the operation of public utilities.

In passing I want to pay tribute to our form of operation and to the public officers and elective officers to whom we are responsible—our board of directors. They have supported a continuing policy in spite of the fact, as Mr. Irwin outlined, that they are subject to constant replacement and vo of the people.

Mr. Alfke and Mr. Irwin have co ered a number of the details of em ployee relations that are most vital, b I think I should be negligent indeed i I were not to call your attention to th fact that postwar planning is a sub stantial part of the business of em ployee relations.

We have had, I think, some 90 more employees go to the armed force with reasonable assurances—as near full assurance as we could give them— that they would have employment whe they returned.

Consequently, a postwar program catching up with deferred maint nance, doing the things that we ha to delay in order to pay off bonds, etc are all involved in employee relation I would like to pay tribute to Mr. Ed ward J. Cleary, the managing edito of *Engineering News Record*, for h splendid article *New Horizons fo Water Service* in the June 3 issue o his magazine. Mr. Cleary has define the problem of the water works in dustry in postwar, and I take the priv lege of mentioning it because I thin that is a part of employee relation and should be made a *must* reading fo every man connected with the wate works industry.

Referring to employee relations, Mr Cleary said: "In connection with per sonnel policies the situation today i such that a definite stand must be take on the question of labor unions, . . . and this policy as is developed late must be other than simply anti-unionism."

Dana Van Dusen *

I would urge all public officials an all members of management of pu

* Gen. Manager, Metropolitan Utilities Dist., Omaha, Neb.

* General Counsel, Vice Gen. Mgr., Metropolitan Utilities Dist., Omaha, Neb.

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cly-owned enterprises, principally of course the water works, to maintain very close relations with their lawyers when they give consideration to the labor problem. By the labor problem I do not mean personnel administration. We all have the problem of personnel administration. That is common to all alike, because it involves the relationship of human beings and the relationship is very little different in public employment than in private employment.

When I speak of the labor problem I speak of the problem created by the demand quite nation-wide of the union of state, county and municipal employees for the right to organize public employees and bargain collectively with public officials. You may not have heard about it, but one union took the city of Newark, New Jersey, and the Metropolitan Utilities District of Omaha, before the National War Labor Board in an effort to get an order to compel them to engage in collective bargaining. The War Labor Board refused to issue any such order and the meaning of the War Labor Board was not, as you might suppose, a ruling with reference to any labor proposition; the ruling was that the federal government did not have the power to control the labor relations of state agencies.

There you have the fundamental thing in this whole problem, because the principle upon which the labor unions demand the right to bargain collectively with publicly-owned business, or semi-business enterprises like water works, is the same principle which the federal government invokes to establish control over the states and their agencies, and also the power to tax them and their instrumentalities. The legal principle is exactly the same in both instances, and we must be consistent in the position which we adopt if we are willing to submit to federal control. If we are willing to assume the burden of federal taxation, then we should also be willing to bargain collectively with union labor. If we are not willing to do all of those things, then we should not be willing to do any one of them.

The demand by union labor for recognition is based upon the legal proposition that when the state and any subdivision of the state, enters into an activity which ordinarily has been or is conducted by private business, then the state and its agencies lose their governmental character and must be treated in all respects the same as private business.

Now that is absolutely fundamental to the existence of municipally-owned and publicly-owned enterprises, because the advantages which we enjoy as governmental subdivisions contribute very greatly to our success. It is my opinion that we should not surrender those advantages without a contest.

The theory that these gentlemen present is one which originated in the English municipalities, whose recent problems we heard so eloquently described this morning, and originated under a type of government which is foreign to our principles and beliefs; that is, the government of the king. It is historical in its origin and it has crept, or found its way, into American law but in a state of complete confusion. That is the reason why management of publicly-owned enterprise should ask for, and obtain, a most thorough consideration of the subject by their legal advisors.

There is a tendency throughout the country for management of public enterprises to seek the easy way out of

this problem; to take half-way measures; to sign a contract which fixes all of the conditions of public employment; to sign the contract with the officers of the union, but to save face by putting at the end a little clause which says that nothing in the contract shall be construed to require a public officer to violate his public duty.

In my judgment there is no half-way point on the road of the controversy with the Union of State, County and Municipal Employees. I think you must decide either to recognize them and deal with them, or you must decide to retain your own initiative, your absolute freedom to exercise the public discretion and the responsibility which the people who elected you placed in your hands. Your first obligation is to the people, not to your employees; to the people who created your enterprise and elected you to manage it for them.

Carl A. Eberling *

The Cincinnati Water Works, as all other water supply utilities, has had considerable difficulty in the past several years maintaining a satisfied personnel. The principal difficulty has been the inability of the municipally-owned water works to maintain the wage rates set up in war industries. The municipally-owned water works, even though it may be in a financial condition to increase the wages of its employees, is so tied in with other municipal divisions who derive their revenue from taxes, that it is necessary for it to maintain a wage scale the same as other municipal divisions.

City employees being paid on an hourly rate have expressed considerable dissatisfaction in regard to this method of payment because of the fact that no vacation, or sick leave, is granted. Even though other departments of the City of Cincinnati have operated in this manner, the Cincinnati Water Works has, for a number of years, paid its entire personnel on an annual pay basis. This includes a 12-working-day vacation for all employees who have been in continuous service from 1 to 15 yr., 15 days for employees in continuous service from 15 to 20 yr. and 18 days for those in service 20 yr. or more. All employees are allowed 12 working days sick leave with pay, per annum. Upon the option of the department head, this is allowed to accumulate over a period of five years.

However, the agitation for increased wages has been almost continuous over the past two years. This finally reached a climax in Cincinnati on Oct. 28, 1942, when some 1500 city employees, principally laborers, went on strike. Of the above number, 191 were Water Works employees, 109 from the distribution division and 82 from the supply division. The other striking employees were from the Waste Collection Department and the Highway Maintenance Department.

The 82 employees who went on strike in the supply division included coal passers, and because of the fact that the strike was called rather unexpectedly, the condition was very serious. In fact, it was necessary to shut down all pumps for a period of approximately two hours. However, we were able to recruit sufficient labor to take care of the coal passing in time, so that the general public was not even aware of a shut down, as our reserve supply was able to meet all demands adequately while the pumps were down.

The replacing of the striking coal

* Supt. Water Works Dept., Cincinnati, O.

passers caused a near riot at our main pumping station; however, it was quelled by the police before any casualties occurred. On Oct. 29, the filter attendants joined the strikers. This again set up a very serious condition. However, the late Mr. Clarence Bahlman and his assistant, Mr. Evans, the chemists, filter foremen and several draftsmen, volunteered their services 24-hr. a day in order to keep the filtration plant in operation. We very gratefully accepted this service and provisions were immediately made to house these men at the filtration plant. Adequate cots were furnished and arrangements were made with one of the hotels to furnish meals. These meals were brought from the hotel to the filter plant by our equipment three times a day.

The fact that 109 employees went on strike in the distribution division practically eliminated the force necessary to maintain the distribution system. Fortunately, nothing of a serious nature occurred for the duration of the strike, which lasted for six days (Oct. 28 to Nov. 3), when the men returned to work.

On Nov. 4, 1942, the Council of Cincinnati passed an ordinance granting a bonus of $80.00 per annum for all employees earning up to $5000.00 per year. All employees earning in excess of $5000.00 were given no bonus.

On Dec. 30, 1942, the City Council passed another ordinance repealing the previous ordinance and granting the following increases: All employees receiving an annual salary up to $1400.00 received $120.00 per yr. increase; all employees receiving from $1401.00 to $2000.00 were given an increase of $144.00 per yr. and employees receiving from $2001.00 to $5000.00, an increase of $168.00 per yr. Those employees earning over $5000.00 per annum were granted no increase.

On June 2, 1943, the City Council repealed the previous ordinance and passed a new ordinance granting an increase of $240.00 per annum on all salaries up to $1999.00, and an increase of $300.00 per year to all salaries from $2000.00 to $7500.00 inclusive.

This increase is considered a bonus to help meet the increased cost of living, and to attempt to hold men from entering outside industry. The increase seems to have allayed the dissatisfaction for the time being. However, what the duration of this period will be, your guess is as good as ours

Battling the Tank Repair Racket

By J. Grant Frye

I HAVE talked in lots of cities in many states. It has always been on subjects very different from this one. I do not know what my wife will say when I get home and she sees this program. Following the first World War, I talked over a good part of the country on what the press called the "Unromantic Side of War," or the "Decade of Disillusionment"; but this is the first time I ever came before anyone to talk on such a subject as this. However, it didn't phase me a bit when someone assigned me the subject. To illustrate how often I do speak publicly, and how my children feel about my speaking:

A few years ago our family was driving down the highway from Cape Girardeau to Dexter, Mo., where my father and mother live. It was Sunday morning. The law business wasn't so good, and we were going down, hoping we would get a little meal or a ham. Mamma and I were riding in the front seat of the car and the kiddies were in the back seat, all looking out the sides, three on each side. Up to that time I had spoken in almost every city in Missouri of one thousand inhabitants or over, either on the subject of politics or war, and at various conventions on the subject of world peace. So by now my children expected nothing else out of me. At any rate they were looking out of the car as little shavers do. They saw an old sow with about a dozen little red piggies. (That was before Henry A. Wallace got down there with that AAA thing. You know, if I were that fellow I could never again, as long as I lived, look an honest broodsow in the face). At any rate, Betty Frances looked out and said, "Oh, Johnny," to her little brother, "look at that old mamma pig and those baby piggies. Aren't they sweet?"

Johnny approved.

She said: "I wonder where the old daddy pig is?"

"Oh," said Johnny, "he is off making a speech."

* * * * *

I suppose I came over here because of an unusual experience I had as a lawyer.

On the 29th day of April of this year in a case where I represented the plaintiff, we concluded a lawsuit in the United States Court at Cape Girardeau, Mo. It was a case styled the City of Illmo, plaintiff, *versus* E. H. Peitzman and William Peitzman, doing business as the U. S. Elevated Tank Maintenance Company, defendants. It took about ten days to try the case, includ-

An address given on June 16, 1943, at the Cleveland Conference by J. Grant Frye, Counselor-at-Law and Attorney for the City of Illmo, Mo. (See editorial note at end of paper.)

ng night sessions. You know we do work at night down in Missouri.

The next day I was called out by the Governor as a Major in the Missouri State Guard, to protect that pipe line bringing oil from the southwest into northeastern United States. My field headquarters were underneath this tank that I had been battling over in court for ten days. That was one time I had a war in my own backyard, not like twenty-five years ago when I spent a couple of years in the Sixth Marines —Second Division. That case was all that had been on my mind for ten days, and I had lived with it for a year and a half. I couldn't help but think about the case just tried. I suppose I mentioned it to a number of people—I must have done so—and I had a copy of the verdict in my pocket that I must have shown a number of times.

Colonel Jones, my immediate superior, who was also down there on the pipeline proposition said to a new officer who had arrived as a replacement: "Has Frye showed you the verdict yet?" The officer did not understand what the Colonel meant. The Colonel said: "He'll jerk it out at the slightest provocation." With that, out it came and I showed it to him.

Now what is the background of that verdict? If I can tell you fellows something here from the point of view of a plain country lawyer, that will be useful to the small American cities, then I will have accomplished considerable on this hazardous trip I had over here.

About July 21st, I believe it was in 1941, one E. B. Wilson from Jackson, Miss., drove into Illmo, Mo., our little city of 1132 inhabitants. Illmo is a little railroad town, 150 miles south of St. Louis, where the city attorney is paid the enormous salary of fifty dollars a year. I am that fellow. I live in Illmo. My office is twelve miles away at Cape Girardeau.

The Illmo City Council on that day signed an agreement with this man Wilson, on behalf of the U. S. Elevated Tank Maintenance Company, of Memphis, to clean, paint and repair the City's elevated water tank. The Council never consulted me about the agreement. I am not apologizing for it. I don't suppose I would have thought much about it if I had been consulted. The first I knew of it was when the Mayor called me on long distance and said, "Come up here quick. There are a bunch tearing up our water tank." I didn't know what he was talking about. He was excited. I was twelve miles away. I hurried over.

I have here the original of the contract signed by the City Council with Wilson. Don't worry, I am not going to read all of it, but here it is, multigraphed or mimeographed, on pea green paper, "U. S. Elevated Tank Company, by E. B. Wilson." The contract says that the U. S. Elevated Tank Company, of Memphis, will paint the tank inside for $185.00, and outside for $290.00. There is a clause in there saying if any loose and defective rivets are found, the company will take them out and charge $2.00 an hour for the use of the equipment.

So much for the contract and some of its provisions. It is in there as plain as day; but the city fathers said to Wilson, "There are no loose rivets. We don't want that." Our tank was in perfect repair, erected in 1929.

Wilson said, "I was up on your tank. I know there aren't any loose rivets, but if there should happen to be one, we will have a crew equipped not only to paint the tank but to put in the miss-

ing rivets. Otherwise, you might have to send to the Chicago Bridge and Iron people who put the tank up originally to put the rivets back. We can do this quickly and cheaply." The City Council then had no objections. They signed the agreement.

We have a very fine City Council. Dr. G. T. Dorris, the Mayor, is a Christian gentleman and an intelligent man. The other men on the Council are all good men. I know they are. Some are railroad engineers—it is a railroad division point. They are good, clean fellows. They just signed the contract and forgot about it.

When Dr. Dorris called me a month later I went down there. That outfit had a crew on the ground. The tank repair foreman, a man named Hinchman, had a bill for, I think, three thousand and some odd dollars which he wanted the city to pay. I said, "What is this all about?" That was the first I had seen or heard of them, or the bill. They had taken 1180 rivets out of the tank, rivets as big around as a broomstick and an inch-and-a-half long, and as bright as the day they were put in. There wasn't a thing in the world wrong with those rivets.

Hinchman said they were loose and defective. The tank to my knowledge had never had a leak; had never had a thing done to it. It was built in 1929 of the finest steel and it was of the finest workmanship. There wasn't any question about it. It was in perfect condition. It didn't really need painting bady, but ought to have had some paint, of course. That was all.

What they had done was to butcher that tank in order to run up a fraudulent repair bill. Incidentally, they had done an awkward and crude piece of work in tearing it up. They had fellows driving out rivets with sixteen pound sledge hammers. They knocked rivets as far as eighty feet. What do you call that, longitudinally?—or latitudinally? You know what I mean. They ruffled, ruptured and ruined the edges of steel, and whatnot.

I looked the tank over. I didn't know much about tanks, but I knew we had been gypped. I said to Hinchman, "You get out of here, I want to talk to this bunch." Out he went. "Fellows, listen," I said to the Council, "if you have the guts to do it, and will stand by me, we will make that outfit pay for it." They said, "All right."

I said, "All right, Jimmy," to the city marshall. (In a little village like Illmo we have a marshall. He happens to be deputy sheriff too. We pay him fifty a year, I believe). I said, "Jimmy get your shot gun and get out there and get those fellows off that tank." I can't repeat the language Jimmy used, but it was meaningful. They came off that tank.

Then I called my stenographer from Cape Girardeau, and she came down in about twelve and a half minutes and brought a typewriter. I dictated an attachment petition. We got the attachment writ out and had it served on that outfit, got notice to take depositions and nailed it on the courthouse door, as you can do on non-residents in our state. We lined that bunch up and handed them subpoenas and they didn't dare leave town.

The tank repair crew had a big tractor-trailer-combine with a machine shop on it. I am satisfied now it was worth $15,000.00 if you could find a market for it. It had an acetylene welding outfit, compressors, tools, and a big motor truck with a big van. We put a fellow there with a shotgun, chained that truck to an electric light pole, and we were off.

Well, the thing was whipped into the State court of course. Then a fellow, William Peitzman—get that name—came up to the deposition hearing in a big, long-nosed Cadillac, 1941 model. I had never ridden in a Cadillac up until that time, and we grabbed the car too. Peitzman's wife had a Cadillac. Peitzman went back to Memphis and came back in his wife's Cadillac, to get his Cadillac, and we got that one too. However, they put up a $10,000.00 counter-attachment bond, and took back all their stuff.

The day came for the taking of deposition. We didn't know the names of the men, except the names of the crew which we got at their boarding-house. They were an apparently ignorant bunch. We knew the big game was somewhere in the offing.

We took the depositions in the Building and Loan Office at Illmo. We have in Illmo one bank, one drug store, one building and loan, one stop and go sign and one lawyer. So we held these depositions in the Building and Loan Office and the room was filled. Everybody in town came. After all, we had a certain pride in this tank. We had bought the tank during the depression at a low cost, $4950, because the construction people needed business and wanted to keep their crew together. I don't know all the reasons and don't care about that phase of it, but even though we got the tank almost as a gift originally, we didn't want anybody to take it from us just because we got it cheap.

We started taking depositions. I don't intend to read them, but I want to tell you something that happened. (If anyone of you has to leave early in order to get home to milk, or anything, just go ahead.) I was taking the deposition of a fellow named Gerald Taylor. I started off by swearing the first one on the list and the court reporter took down what he said. I wanted to get the facts. I wanted to know the background—who this outfit was—how they had been doing, and what they had been doing? So I asked Taylor some questions: "Where did you last work? What city?"

"Don't remember."

"Well, then, the one before that?"

"Don't remember."

"Well, you don't remember that city? What was the one before that?"

"Don't remember."

"Well, give me some city you have worked in before you got to Illmo?"

"Don't remember."

"Listen here," I said, "none of this funny stuff with me. You will go to jail as quick as I can get the notary to commit you, if you don't open up your mouth and testify."

Up to about that time I had never heard of William Peitzman—didn't know his name, or anything. I had sued using the assumed business name.

When I threatened to put Taylor in jail, a big, swarthy-looking fellow, about six-and-a-half-feet tall, weighing near two hundred pounds jumped up in the crowd and said, "I will bond him out," and he cursed. It was Peitzman.

I said, "Mister, take this witness chair."

Peitzman said, "I have traveled from coast to coast, and I don't think any little whipper-snapper lawyer from a one-horse town—."

I said, "Please, sir, just take the witness chair and be sworn."

He said something to the effect that he didn't intend to testify.

I said, "Mr. Buck, won't you kindly assist the gentleman to the witness chair?"

The room was very crowded and he was sitting a distance from his attorney, apparently to keep up from knowing his interest. He said he didn't have to testify again. The constable had a subpoena which some of the city officials had gotten the Notary to fill out and sign during the proceedings as they had learned his name and knew he was present. I had not known he was there, being engaged in the examination of the witnesses.

Mr. Buck held the subpoena out to him and then his (Peitzman's) lawyer told him that he would have to be sworn and Mr. Buck escorted him through the crowd to the witness chair and he sat down. Before he could recover from his surprise as being called, I had gotten some of the facts out of him that I needed very badly.

I am sorry I haven't his deposition here. It is the very thing I meant to bring and didn't bring. "What is your name?" I asked him.

He told me that.

"Where were you born?"

"New Orleans."

Later he testified in court that he was born in Pana, Illinois.

"And what is your connection with the U. S. Elevated Tank Maintenance Company?"

He said he was an employee.

I said, "Who is that company?"

He was reluctant, but I forced out of him that it was the trade name of his wife, E. H. Peitzman.

"Where do you have offices?"

"1080 Union Avenue, Memphis."

"How long has your office been there?"

"I don't remember."

"About how long?"

"I don't remember."

"As much as a year?"

"I don't remember."

"Five years?"

"I don't remember."

"One year?"

"I don't remember."

"One day?"

"I don't remember."

"Ten years?"

"I don't remember." He wouldn't answer anything.

I said, "Have you ever had any litigation with any city over any work you have been doing?"

"I don't remember."

"Ever had a lawsuit anywhere?"

"I don't remember."

In twenty pages of deposition, where I asked him plain and simple questions like that, I got, "I don't remember." However, I did get some things out of him.

Later, I went down to Memphis for a few days. I found that this company was not a corporation; it was not registered as such in any state. For a number of years he had done business under the name of the Midstate Steeple Jack & Construction Company. About 1938, he was doing business under both names. In territory where he was not known as Midstate, he did business as Midstate. Where he was already known by that name, he continued to do business as the U. S. Elevated Tank Maintenance Company. He used whichever name was convenient. In a letter to the village of Schoolcraft, Michigan, his wife signed his name and put her initials on it, telling the village to secure the services of either company. She was supposed to own the one company and he the other—competitors, husband and wife. I managed to get a copy of that letter.

I started in. I went to some of the municipal leagues over the country. Finally I located some of Peitzman's former employees—girls who had

worked in the Memphis office. They were reluctant to give me information. I could understand that they might have a certain loyalty even though they had been discharged. Eventually I found out that in many American cities, this outfit had done exactly the same thing they had done in Illmo. I spent a long time getting that background. It took a year and a half to marshall all of these facts.

Then in July of last year—that was the year after this episode had occurred at Illmo—I set out taking depositions across the United States. However, I want to give you a little chapter in between.

After I had gotten Peitzman's name and his wife's name, I amended the petition in the Circuit Court of Scott County, Mo., to include their true names. We sued for $5000.00; that is, $4000.00 actual damages, and $1000.00 punitive damages. That was the original suit. We finally raised it to $14,000.00, which we got.

At any rate, before I gave that notice last July to take depositions over the United States generally, I gave Peitzman a notice to take depositions in Memphis. You see, I had found out a few things. I wanted to take his deposition and his wife's deposition. I wanted to find out who their employees were and take their depositions. In Illmo, I had asked Peitzman the names of his employees and he wouldn't tell me. He didn't know who wrote the checks, nor the name of the bookkeeper. So I gave him notice to take his deposition at the office of a certain lawyer in Memphis, on a certain day in April, 1942. We gave the writs of subpoena to the deputy sheriff in Memphis. I paid that sheriff five dollars a day for five consecutive days to try to serve those subpoenas. Peitzman and his wife would lock themselves up in their house or their office. He never did get them served. Although we went to Memphis, we didn't get any depositions.

The Peitzmans then removed the case to the U. S. Courts, and, like Brer Rabbit, that is the mistake they made. When they got the case in the U. S. Court, that gave us a chance to do a few things under the new Federal Rules of Civil Procedure. They removed the case to the Federal courts because they didn't think a country lawyer of Illmo would know enough to fight a case in the U. S. Court. Perhaps I didn't know enough, but I soon found out enough. I had read these rules through and I found that you could give a man a notice under the Federal rules that you were going to take his deposition, if he were a party to the suit, and you didn't need to subpoena him. You could give the notice to his lawyer. I went down the street and handed the notice to Peitzman's lawyer. He had many lawyers during the case. I gave his lawyer a notice for Peitzman and his wife to be in the Shelby County courthouse at a certain time, that I was going to take their depositions.

Again the day came to take their depositions. I was there in the courthouse on the front row, but neither Peitzman nor his wife showed up.

It was getting more interesting. They were heading into trouble when they failed to show up under the Federal rules. A few days later I again gave them notice that I was going to take their depositions and they were to be at the same place. This time I said, "I want you to produce certain documents. I want all your contracts, your books, records, your income tax carbons, your compensation records,

and so on." I was going to get their employees.

On the day set I was down on the front row in the courthouse. They didn't show up.

On May 27th, they gave me notice they were going to take depositions in Memphis. I went down and there sat Mr. and Mrs. Peitzman. They took depositions of some of their outfit. One was a fellow by the name of Pence and I saw then that when the day of the trial came, I had him licked. Peitzman also took depositions of Mr. Hinchman, the foreman who had been at Illmo; they took one of a fellow by the name of Christopher Columbus Hughes—somebody in the audience will remember that name.

The witnesses testified the tank had been leaking badly. They had seen this the day before—the tank was just drenching the earth. They were heading right down our alley. We wanted to show that the tank was in bad shape.

At any rate on May 27th, they took depositions.

I had given notice I would take depositions on May 28th, at Shelby County Courthouse, in Memphis. They had been there the day before up to dark taking these depositions, but they never showed up on the 28th. Their lawyer showed up. I said, "I will just swear this lawyer here." He wouldn't be sworn.

"Then, where are these Peitzmans?" I said. "Where did you last see them?"

He said, "You know we quit at six o'clock yesterday over at Johnny's office."

"Have you seen them since?" I asked.

He said, "No."

"I have," I said. "Swear me." I could have told it without the oath. "I came into the Claridge Hotel last night at eleven-thirty," I said. "I had been to the theatre. I saw you and the Peitzmans sitting there in the lobby with your backs to the elevator as I went towards it. Then, this morning at eight-thirty, when I came to the hotel from breakfast, I saw William Peitzman go into the elevator ahead of me. I got off at the same floor because my room is 923 and yours is 928, I believe. I saw him go to your door, knock on the door, and when the door opened you said, 'Good morning, Mr. Peitzman,' and yet you say you haven't seen him since six o'clock last night."

We started about July 25th, 1942, taking these depositions. Incidentally we took depositions in thirteen states. I gave him a notice that covered a two or three months period, covering thirteen states from Florida to Wisconsin and Michigan and as far west as Oklahoma and Texas; as far east as West Salem, Ohio.

Our first town was Sparta, Ill., then Waterloo and Jacksonville, Ill., then Beardstown, Tremont and Taylorville, Ill.; then we jumped into another state and kept on going through thirteen different states.

Now at first Peitzman went with his lawyer in taking these depositions. Sparta was a dead ringer for Illmo on the facts. The evidence showed that at Sparta he took some sort of a cap off the riser pipe. They kept him in jail in Chester until he returned it. That was part of his duress to force them to pay his bill for tearing up the tank. Peitzman didn't show up inside the deposition room there, but I saw him outside in the Cadillac. He watched from a distance. When it was over I got in my car and he and his lawyer get in Peitzman's car and we went over to Waterloo.

We got to Waterloo and took depositions. It was the same old story. At Waterloo he had done something inside to the ladder. Peitzman sat there and heard that.

I said, "Now, Mr. Peitzman, will you please take the stand?"

"I am not going to do it," he said. "That is all."

I got to Mt. Sterling, Ill. the next day and he refused again to take the stand. You see I would take two or three depositions a day in towns two to three hundred miles apart.

I got to Beardstown and Peitzman refused to take the stand. We took depositions in many towns of the United States, too many to mention here, but among them were: Pleasant Hill, Mo., Greeneboro, Ga., Carrollton, Ga., Lyons, Ga., Clio, Ala., Beardstown, Ill., Mt. Sterling, Ill., Spiro, Okla., Lewisville, Ark., and Ft. Deposit, Ala. These towns were all dead ringers for Illmo on the facts of our case. You could lay them one upon another and they would fit like congruous triangles.

Three or four times he refused to take the stand. The best one was at Springfield Ill. He didn't know what I was going to do there; but I knew. I went into the courthouse and in the circuit clerks office started taking depositions. I called the circuit clerk as a witness.

I have a certified copy of the circuit court record of Sangamon County, Springfield, Ill., showing that on January 5th, 1942, William Peitzman of Memphis, Tenn., who lived at 1205 Parkway South, Memphis, who had lived there for many years, went to Springfield, Ill., hundreds of miles away and swore in the circuit court that he resided up there in Illinois, and wanted to change his name from William Peitzman to W. A. Riley. The court gave him a change of name. I had proved all that, and proved that his wife never changed hers. Then I called the lawyer whose name was on the petition. I called his lawyer and I put him on the stand. "Did you know this fellow didn't live here?"

"No, sir, we didn't know."

"All right, Mr. Peitzman, you please take the stand."

"Oh, Carl," he said, " I don't want to take the stand," and he didn't either. We went on our way taking depositions, but he had dropped out.

On October 24th, 1942, I finished those depositions. I had taken them in forty-nine different cities.

I haven't told you the half of it. I went before the U. S. judge and under the Federal rules, moved the court to strike Peitzman's answer. He had an answer himself, and his wife had an answer and counter claim. I asked the court to strike the answers on the ground they had refused to give testimony. The court struck out their pleadings, left them without an answer, and entered a default judgment against them. That was October of last year.

Then the case came up on the amount of our damages. The court said it was going to let a jury pass on the amount of our damages. The case came on and we tried it from April 21st to April 29th, 1943. We read those depositions. We put our witnesses on to show our damages and they put their witnesses on.

It took nearly ten days to try that case. I will try in ten minutes to give you the gist and substance of the testimony:

They had done business as the Midstate Steeple Jack & Construction Company for a number of years—up to 1938. Then they did business under

the names of both companies for an overlapping period, and then they dropped the Midstate name and did business as U. S. Elevated Tank Maintenance Company, up to January first, 1942. On January fifth, 1942, Peitzman went to Springfield and changed his name to W. A. Riley. There isn't any question about the facts. I have them. His testimony was written by court reporters, and I have it. I wish I had time to read it. Anyway, he changed his name to W. A. Riley.

He testified that within four or five days of January fifth, he marked the name U. S. Elevated Tank Maintenance Company, off all these trucks, trailers and machine shops. He had about a dozen of them. He painted them all out and painted on the side instead, "Dixie Tank and Bridge Company." That was concurrent with the change in his own name. Within four or five days they pulled out, locked up at 1080 Union Avenue, Memphis, Tenn., moved three hundred miles to Nashville, Tenn., where he had an office at Third National Bank Building.

He ran a big ad in "Southern City" magazine, which I have here. Some of you probably know it. Here is a photostatic copy of "The Southern City" and here is the ad of the Dixie Tank and Bridge Company, Nashville, Tenn. It reads: "Branch offices Memphis, Post Office Box 14; Tampa, P. O. Box 1642; Richmond, Virginia, and a number there; Macon, Georgia, 402; Owasso, Wisconsin; Columbia, Virginia; Newark, Ohio, 623; Detroit, 1423; Raleigh, N.C. 251; Greeneville, 1074; Dallas, Texas 1881."

Recently full page ads of Peitzman under the name Dixie Tank and Bridge Company appeared in other magazines. A portion of these ads reads (printed in red ink): "Beware. Investigate Tank erection and maintenance companies thru your Banks, War Production Board, Dun & Bradstreet, Inc. or the F. B. I., before you have your tank worked on." Very impressive and misleading. Here are all the branch offices.

Peitzman, alias Riley, admitted on cross-examination that those offices are absolutely fictitious.

The ballyhoo literature of the Midstate Steeple Jack & Construction Company, marked Exhibit A, shows the same branch offices except it was more extensive, but they are almost word for word the same.

The U. S. Elevated Tank Maintenance Company used a different color but wording, pictures and style is the same—all those branch offices—all fictitious.

Here on the Dixie Tank and Bridge Company ad is the same thing and down at the bottom the same cut of the trucks; the same exactly.

I made Peitzman admit that there were no branch offices at any of those addresses; not a soul in charge; no representative; nothing. I asked how he managed it if anyone was credulous enough to write a letter of inquiry. He said that every so often they wrote to the postmasters of the cities where their offices were supposed to be, and inquired if there was any mail in the post office box and if so, to send it to them. I am telling you men the facts, borne out by witnesses and heard from the lips of Peitzman. I am telling you what he and his wife testified to.

Now I was interested in the gentleman's social background. As a matter of common decency I wanted to go into that. He said he was born and raised in New Orleans, and I believed him until the day the court made him take the stand and he said he was born in

Pana, Ill. We asked if he was born in both places. He said that wasn't quite accurate, but he couldn't give any explanation as to why he was born in both places.

I asked him what made him change his name, the name of his father. I don't want anyone to think I am throwing a brick at them, and I am saying this in good faith. This fellow, I think, is German. I think there is no question about that, although he looks more like a southern European. However, no man can help his background. There was some feeling that he was not German, and the federal judge was curious. The judge was an Irishman and he wanted to know what made him change his name to "Riley."

He testified that he changed his name because as much as three years ago his competitors accused him of being a Nazi spy and a saboteur, and he changed his name in order to get away from that reputation.

Well, I know why he changed his name. He changed it because that little City of Illmo had its teeth in his neck and had taken him over thirteen states. He felt he had to do something to free himself. Within a few weeks from the time he changed his office to Nashville, I served notice that I was going to take depositions across the hall from him there.

Every lick we struck I want you to know was fair, but tough. It was like the wallop of a battleship and we didn't draw any punches. We asked no quarter and we certainly gave none. My theory is that when you fight an outfit like that you should not use soft gloves. Too many men and too many companies are afraid they will get into a lawsuit.

I got into this thing, and the City of Illmo got into it, because we knew we were right. We knew that civic righteousness and common decency required us to do something about it. I found on my tour, when I was taking those depositions, that no city knew anything about it.

They ran into this situation however, in Illmo: We are a twin city to Fornfelt, and we don't love Fornfelt either. Did you ever see twin cities that did? Fornfelt has a water system; we have a water system. Despite our clashes and cross politics, and cross common sense, we did have enough engineering sense to tie onto them and they onto us. If one of our water systems is temporarily out, we can get water back and forth. So we weren't hurt. Then we had a city council that would do something. They could get water; they had a lawyer that didn't know any better, so we went after them.

At Pleasant Hill, Mo.,—I happened to hear about that—Peitzman cut 4000 rivets out of a tank that didn't have over eight or nine thousand in it originally. There wasn't a thing wrong with the rivets. I saw them. I have rivets from all over the land. If any of you need something for sinkers for a trot line, come down.

One of their henchmen took a section out of the riser pipe at Lyons, Georgia, and hid it as a part of their game. The city couldn't get one. He kept it three weeks, I believe it was.

At Dexter, Mich., their game was to remove rivets, put them into nail kegs and take them out of the country so the city could not use them as evidence. There the city officials found a grave; and in the grave a body —a keg of rivets buried.

The attorney for Dixie Tank and Bridge Company, took exception to an article published in "Southern City

Magazine." His letter, in which he mentions W. A. Riley, is reprinted in a recent issue of "Southern City." He doesn't divulge that Riley and William Peitzman are the same man.

"Southern City" is a sort of clearing house for a great many municipalities in southeastern United States. Certainly they ought to know the facts about Peitzman. I wanted to tell them, but they did not let their guard down. They did not answer my letters.

I could tell you a lot of other things about this tank business, but there isn't time. I don't profess to be an expert. I was mentioned today as an expert. I've found out what an expert is. He's a country boy a long way from home.

I do know this: I have traveled twelve thousand miles on this case. I have visited many cities. I have correspondence galore here in my files. I will stand on every word I have said. It is the truth. I know it is the fact and I can prove it; and I do hope that somehow you men can get this word to the right people. Let me say that not in a single city where a city engineer or a water works superintendent worthy of the name was on the job, did they ever get away with such a thing as Peitzman tried at Illmo. Often they would go into a city, make a contract and if the water works superintendent stood over them to keep them from cutting rivets, they quickly painted the tank and left town, or left town without turning a hand. They didn't work except where they found people off guard, credulous—good people who didn't know any better.

As I traveled over the United States, I found some few cities where the type of men who are running the city were small and venal. Occasionally, I found that I must confess! But also I found in many cities men of high character and nobility. For the most part I found good, honest men, who had their own livelihood to make and who were running cities as an accommodation to their neighbors. They believed that every man was as honest as they were. These are cities ranging from eight hundred up to five or six thousand population. When you get above that population, usually you run into well-organized city governments, where men devote themselves exclusively to some line of municipal activity; then you have pretty good protection.

The other day they appealed the case to the U. S. Circuit Court of Appeals and put up a $16,000.00 appeal bond. We are now secured for the $14,000.00 verdict we got, plus $2000.00 cost in subpoenaing witnesses in fifty cities, and the stenographic expense.

EDITOR'S NOTE: *"Dixie Tank and Bridge Co.," is the trade name under which business is conducted by Wm. A. Riley (formerly known as Wm. A. Peitzman) and his wife Ethel Hester Riley (formerly known as Ethel Hester Peitzman). Early in 1942, William Albert Peitzman in court proceedings in Sangamon County, Ill., had his name changed to William A. Riley. Ethel Hester Peitzman now uses the name of Mrs. William A. Riley.*

The Peitzman (Riley) couple have done business successively under the names of Mid-State Steeple Jack and Roofing Co., Mid-State Steeplejack Construction Company, the U.S. Elevated Tank Maintenance Company and the Dixie Tank & Bridge Co.

Canadian Water Quality Standards

By Norman J. Howard

WHAT has been designated as the Dominion of Canada Standard of Water Quality is possibly wrongly described, since there seems to be considerable doubt that such a standard exists. The first official reference to a Canadian requirement of bacteriological purity of water was prepared in 1923 and appeared in an order in council (P.C. 1091), covering "regulations concerning water for drinking and culinary purposes on vessels navigating on the Great Lakes and inland waters." In that order appears the following statement:

> Water furnished on such vessels for drinking and culinary purposes shall at all times be a potable water free of pathogenic bacteria and shall comply with the standard for drinking and culinary water; namely, shall not contain organisms of the colon group in excess of 2 per 100 cc. of the water determined by the presumptive test as adopted by the American Public Health Association in their standard (current) methods for bacteriological examination of water (Phelps' method of calculation).

Inasmuch as there exists, between the United States and Canada, an international understanding on water quality as affected by rail and boat transportation between the two countries, it is difficult to see why special Canadian standards of quality were formulated, particularly in view of the fact that such standards as detailed above did not conform to United States technique or requirements. In August 1942, a new order in council was issued under the War Measures Act. The section dealing with quality standards reads as follows:

> For the purpose of this section, water shall be deemed to be unsafe for human consumption if it is not a potable water free from pathogenic bacteria and if it contains organisms of the colon group in excess of 1 per 100 cc. of the water, determined by the presumptive test for bacteriological examination of water, using Phelps' method of calculation.

From this it will be seen that the only change made in the period of June 1923 to August 1942 was the modification of the requirement regarding coliform bacteria content, reducing the limit from 2 to 1 per 100 ml. The generally accepted fact that the presumptive test alone does not specifically indicate the presence of members of the coliform group would seem to limit the value of the Canadian requirements from a bacteriological viewpoint. *Standard Methods* * specifically states that the presumptive test "may be applied in the examination of sewage, sewage effluents or water showing relatively high pollution, where

A paper presented on June 18, 1943, at the Cleveland Conference by Norman J. Howard, Director of Water Purif., Filtration Plant, Toronto, Ont.

* *Standard Methods for the Examination of Water and Sewage.* Am. Public Health Assn. & Am. Water Works Assn., New York (8th ed., 1936).

'fitness' for use as drinking water is not under consideration."

A considerable amount of adverse publicity in both the United States and Canada followed publication of the modified so-called standard of quality. It is not yet clear if this bacteriological requirement is meant as a standard to cover all water supplies in Canada or if it was formulated as a coercive measure to compel the treatment of certain water supplies considered unsatisfactory from a bacteriological viewpoint and which at the present time are not being treated at all. If the latter is the case, little exception could have been taken to the preparation of bacteriological standards based upon generally accepted technique and practice. Under the British North American Act, the provinces in Canada were given direct control over public health, while the charter incorporating the Department of Pensions and National Health included a section which clearly stated that neither the minister nor any official of the department had jurisdiction over provincial or municipal authorities within certain defined limits. It would appear that the sanitary engineering divisions of at least Ontario and Quebec were not consulted concerning the recent adoption of a water standard, regardless of statements to the contrary. It should of course be stated that the so-called "Dominion Requirement" was formulated under the War Measures Act, which gave the government unlimited authority.

At the present time, the writer knows of no public health or water control laboratory in Canada, which is using the presumptive test alone for determining the possible presence of members of the coliform group. Standard methods of analysis as adopted and published by the American Public Health Association and the American Water Works Association are used almost exclusively, while the bacteriological standards of the United States Public Health Service are used for evaluating the quality of the finished water.

Of recent date, an effort has been made to have the Dominion Government clarify the whole issue. On June 7, 1943, Dr. R. E. Woodhouse, Deputy Minister of Pensions and National Health, made the following statement in correspondence with the writer:

> I have gone through rather carefully the new booklet on "Recommended Water Sanitation Practice" of the U.S. Public Health Service [*see* Jour. A.W.W.A., **35**: 135 (1943).] and I do not find any references therein which had not been dealt with in correspondence between the officers of this department and the officials of the U.S. Public Health Service; and when we wish to revise or set up a Canadian standard or discuss the acceptance of a new American standard, we will bring into conference our bacteriologists and our sanitary engineers, and I am sure we will be able to maintain the high standing of efficiency of administration in this field in Canada which has existed in the past.

This would seem to leave the question of the existence of a Canadian standard still in doubt, as expressed in the words of the minister: "when we wish to revise or set up a Canadian standard or discuss the acceptance of a new American standard. . . ." It does, however, give some hope that, in the future, the federal department may plan to reconsider the whole subject and to formulate Canadian standards of water quality based upon accepted practice and guided by observers especially trained in this most important field. [EDITOR'S NOTE. References to the promulgation of the 1942 "order in Council" relating to water quality were published in the Jour. A.W.W.A., **34**: 1739 (1942).]

The Extent of Use of Activated Carbon
A Review of the U.S.P.H.S. Survey

By E. A. Sigworth

THIRTEEN years ago (in the spring of 1930) powdered activated carbon was first applied on a practical scale at the New Milford, New Jersey plant, of the Hackensack Water Company. Since that time many water plants scattered over the United States, as well as in Canada and other countries are using this material to control taste and odor in water supplies. Many varieties and intensities of odors have been encountered. Conditions necessitating the use of powdered activated carbon have been variable: weather conditions, stream pollution, many different algae types, etc. The need for data concerning dosages of activated carbon necessary for correcting average taste and odor conditions was early recognized, and resulted in conducting a survey (1) in 1937 covering 256 plants in the United States and Canada. The limited scope of this survey was recognized at the time.

In 1942 the U.S. Public Health Service made available to the water works field a survey (2) covering 5,372 water systems in the United States. This survey furnished information covering each individual plant on the source of supply, population served, rated capacity of the plant, average output, chemical treatments, etc. From this wealth of information together with sales records of activated carbon, statistical data have been prepared covering many of the plants.

In the U.S. Public Health Survey a total of 746 plants were reported as using activated carbon. Within the same territory covered by the survey, independent records showed a total of 1,030 plants as having used activated carbon at one time or another. If we accept as correct actual sales records, plus the report of the U.S. Public Health Service, there are 1,164 plants within the continental United States using activated carbon. This number would be further increased if plants at Army camps and in other countries were included. Of this grand total there are 842 plants or 72 per cent, on which sufficient records are available for arriving at some definite conclusion. Based on most reliable estimates, the quantity of activated carbon consumed by these plants represents at least 75 per cent of all the carbon supplied into the water field in this country. It will be noted that the number of plants recorded in this present sur-

A paper presented on June 15, 1943, at the Cleveland Conference by E. A. Sigworth, Water Purification Div. West Virginia Pulp & Paper Co., New York, N.Y.

vey is greater than the total number of users reported in the U.S. Public Health Service Survey. This is due to the fact that, although other data were recorded, some plants actually using activated carbon were not so recorded. For example, the U. S. Public Health Service Survey showed no users of activated carbon in the State of Oklahoma, although this survey shows 33 plants.

General Data

In Table 1 there is recorded by states the number of plants reported in this present survey as using powdered activated carbon. Also there is shown the average daily output in million gallons per day for all of these plants. For the total 842 plants, the daily output in mgd. is 2,774.7, so that the average plant delivers approximately 3.3 mgd. According to the U.S. Public Health Survey, the population served by these 842 plants is 25,647,630, so that the average per capita consumption is 108 gpd. The population served by these plants represents only about 20 per cent of the entire population of the United States. However, the population served by water treatment plants throughout the United States has been estimated at about 74 million (3), so that the 842 plants herewith covered represent over 34 per cent of the population served by treatment plants. This is a very high proportion when it is realized that activated carbon is seldom employed in unfiltered water supplies.

TABLE I

General Data

States	No. of Plants	Daily Output (mgd.)	Avg. Carbon Dosage of All Plants, Ann. Basis, Lb. Per Mil. Gal.	Max. Avg. Carbon Dosage of individual Plant, Ann. Basis, Lb. Per Mil. Gal.
Illinois	78	88.7	15.8	245
Pennsylvania	70	188.6	17.7	328
New York	67	254.3	7.8	208
Ohio	57	378.9	5.6	91
Missouri	52	119.5	2.9	94
North Carolina	48	59.5	31.9	38
Kansas	44	44.4	7.3	164
Oklahoma	33	21.1	2.9	82
Kentucky	32	71.9	6.1	110
Texas	31	76.7	21.2	82
Iowa	31	31.7	17.9	169
Virginia	29	67.4	18.2	59
Michigan	28	362.3	6.4	456
Indiana	27	106.8	39.7	168
West Virginia	26	33.1	34.8	201
South Carolina	16	24.1	7.1	37
Wisconsin	15	113.8	21.9	350
New Jersey	15	113.3	9.4	40
Tennessee	15	36.1	4.9	55
Others	128	582.5	6.3	70
Totals	842	2,774.7	10.6	456

TABLE II

Sources of Supply

States	Rivers		Creeks		Lakes, Reservoirs, Etc.	
	No. of Plants	Avg. Carbon Dosage in Lb. Per Mil. Gal.	No. of Plants	Avg. Carbon Dosage in Lb. Per Mil. Gal.	No. of Plants	Avg. Carbon Dosage in Lb. Per Mil. Gal.
Illinois	23	6.0	32	18.7	23	17.3
Pennsylvania	27	23.9	35	13.4	8	4.4
New York	16	12.2	16	11.5	35	6.1
Ohio	17	5.3	7	12.6	33	5.6
Missouri	18	2.5	6	3.7	29	13.4
North Carolina	18	10.0	23	12.0	7	5.5
Kansas	25	5.7	5	11.8	14	22.4
Oklahoma	6	2.0	3	5.6	22	3.0
Kentucky	12	5.6	5	6.4	15	9.5
Texas	6	9.4	2	16.4	24	24.1
Iowa	11	18.6	1	13.7	19	15.8
Virginia	18	6.0	3	3.0	8	35.6
Michigan	14	5.2			14	15.8
Indiana	15	15.8	4	12.5	8	100.0
West Virginia	19	36.4	5	34.6	2	12.9
South Carolina	6	7.3	8	4.4	2	14.0
Wisconsin	6	142.8			9	9.1
New Jersey	6	9.1	2	23.0	7	6.7
Tennessee	8	5.2	2	2.9	5	13.2
Others	64	6.6	22	6.2	42	5.1
Totals	335	8.8	182	12.7	325	12.8

The average carbon dosage for all plants, was calculated by totaling the average daily carbon usage for all plants and dividing this by the total daily output in mgd. This procedure was followed for all calculations throughout this survey, since it was realized that to average dosages of individual plants, might give misleading results. It is interesting (Table 1) that the State of Indiana leads all other states in the rate of dosage of carbon being utilized for taste and odor control. West Virginia is a close second. It can be assumed that the water being treated within these individual States, may be more severe as regards tastes and odors, although it is just as possible that individual operators within these states realize more fully the desirability of delivering more palatable water to their consumers. All of the carbon dosages recorded in Table 1 are based on an annual carbon usage. Since in many plants it is not necessary to apply carbon except for short periods of the time when tastes and odors exist, it will be realized that much higher dosages would be used during those periods when activated carbon is being applied. Of all of the plants covered in this survey, the highest dosage of carbon is being utilized at Trenton, Mich., again based on annual carbon usage, where the average over-all usage is calculated at 456 lb. per million gal., reaching a maximum of 730 lb. per million gal. during the year 1940.

Neenah and Oshkosh, Wis., also use large dosages of powdered activated carbon. The average annual consumption at Neenah, Wis., is equivalent to approximately 350 lb. per million gal. Oshkosh reached a maximum annual dosage of 433 lb. per million gal. during 1939. All of these extremely high carbon dosages are considerably reduced when an average is taken, which includes many plants utilizing very small dosages, and also plants where carbon is used only a small proportion of the time. Of the total 842 plants covered in the present survey, the average carbon dosage, on an annual basis, is 10.6 lb. per million gal. Considering the fact that carbon is used perhaps only six months per year on a general average, it will be realized that the average carbon dosage (when tastes and odors exist in a supply) is approximately 21 lb. per million gal. Based on average delivered prices, the cost of activated carbon to serve 25,647,630 people is equivalent to less than 2 cents per capita, per year. This seems little enough to spend for producing a palatable water.

Effect of Source of Supply

From the information available, an attempt was made to try to determine the influence of the source of supply

TABLE III

Size of Plants

State	<0.5 Million Gallons Per Day		0.5 to 1.0 mgd.		1.0 to 10.0 mgd.		10 mgd.. or More	
	No. of Plants	Avg. Carbon Dosage in Lb. Per Mil. Gal.	No. of Plants	Avg. Carbon Dosage in Lb. Per Mil. Gal.	No. of Plants	Avg. Carbon Dosage in Lb. Per Mil. Gal.	No. of Plants	Avg. Carbon Dosage in Lb. Per Mil. Gal.
Illinois	45	19.6	11	23.4	21	15.3	1	3.7
Pennsylvania	15	16.7	20	12.1	29	21.2	5	3.4
New York	25	29.7	16	11.2	22	11.1	4	4.8
Ohio	23	12.9	9	11.6	19	6.0	6	5.3
Missouri	37	19.5	7	10.0	7	4.9	2	1.2
North Carolina	18	8.0	13	8.4	16	11.5	1	13.2
Kansas	29	19.0	7	15.9	7	6.3	1	2.2
Oklahoma	18	7.2	9	3.9	6	1.2	—	—
Kentucky	20	4.2	6	10.8	5	12.5	1	1.9
Texas	10	15.1	8	5.6	11	13.4	2	29.6
Iowa	18	29.4	3	2.2	10	18.1	—	—
Virginia	12	5.2	5	5.8	10	7.3	2	29.9
Michigan	10	59.3	5	14.0	10	28.3	3	3.4
Indiana	8	40.0	6	11.3	9	28.5	4	46.3
West Virginia	13	21.2	3	23.4	10	36.3	—	—
South Carolina	5	8.0	7	10.5	4	6.2	—	—
Wisconsin	4	233.0	3	80.8	7	55.6	1	9.4
New Jersey	3	22.3	2	10.2	6	14.1	4	7.9
Tennessee	6	32.7	4	4.6	3	14.5	2	3.3
Others	45	12.2	26	10.7	48	11.6	9	3.9
Totals	364	20.3	170	12.2	260	16.0	48	7.6

Therefore, all of the plants were reclassified according to their source of supply—a river, a creek, a lake, a reservoir, etc., (see Table II). The carbon dosage applied to river water is below the average, namely, 8.8 lb. per million gal., whereas the dosage applied to water derived from creeks, reservoirs, etc., is above the general average (12.7 and 12.8 lb. million gal.). The highest dosage for handling river supplies is credited to the State of Wisconsin where the average dosage is 142.8 lb. per million gal. Within the State of Indiana, it would seem that more difficulty is encountered with lake and reservoir supplies, since the average dosage is 100 lb. per million gal. Tastes and odors in flowing streams, such as rivers and creeks, are usually associated with trade waste pollution; whereas tastes and odors from still water supplies, such as lakes and reservoirs, are usually attributed to algae. Bearing this in mind, it is desirable to offer some explanation for the high dosage of carbon employed in the State of Wisconsin, for treatment of river supplies. Of the six water plants accounting for this high dosage, three (Appleton, Menasha, and Neenah) are recorded in the U.S. Public Health Survey as deriving their source of supply from the Fox River. The Fox River drains Lake Winnebago which is notorious for algae growths, and it is well known within the water works field that these three plants are faced with very severe algae conditions necessitating high carbon dosages for taste and odor control. Based on the all-around average dosages for different sources of supply, it would seem that algae still remain in the limelight as the predominating cause of taste and odor in water supplies.

Effect of Size of Plants

An attempt was also made to determine from the data available just how the size of the water plant might influence the proportion of carbon being applied. Extremely small water plants could be expected to have considerable difficulty in feeding extremely small quantities of activated carbon economically to take care of taste and odor problems. Furthermore, small plants undoubtedly lack sufficient personnel, so that there would be a greater tendency for over-dosing than in plants delivering large volumes of water. The various plants covered in the present survey were, therefore, reclassified as to size of plants as follows: Plants delivering less than 500,000 gpd.; plants delivering from 500,000 to 1,000,000 gpd.; plants delivering from 1,000,000 up to 10,000,000 gpd.; plants delivering 10,000,000 gpd., or more (Table III). In the extremely small plants, which predominate in number (364), the over-all carbon dosage has been calculated at 20.3 lb. per million gal. Although it had been expected that there would be a gradual drop of the carbon dosage inversely proportional to the size of the plant, it was found that actually those plants having an output of 1,000,000 to 10,000,000 gpd., rate a close second to the extremely small plants of less than 500,000 gpd. Generally speaking, it seems fair to assume that overdosing with activated carbon, is more likely to occur in small plants than in the extremely large plants where better control is possible.

Records of the point of carbon application were not complete, and covered only 549 plants. Of these, 78 per cent applied carbon prior to sedimentation, 19 per cent to the filters, and 3 per cent as a split treatment.

Conclusions

The 842 plants covered in this summary represent 72 per cent of the users of activated carbon within the United States and, therefore, the summary should give data which are representative of all of those plants where activated carbon is being used.

The average annual dosage of 10.6 lb. per million gal., appears to be a very small dosage for satisfactorily controlling tastes and odors which may develop in an average water supply. It can be expected that this dosage should increase in the future as more attention is directed toward palatability of water supplies.

Still water supplies require higher average carbon dosages, indicating that algae is still the predominating cause of tastes and odors in water supplies.

Smaller plants use higher proportions of activated carbon, possibly because feeding equipment is not sufficiently accurate to proportion such small dosages as are required. Extremely large plants, generally speaking, utilize relatively small proportions of activated carbon. This may be due partially to ability to proportion more accurately the carbon feed. However, another contributing factor is the tendency to under-treat in order to reduce chemical costs. In some cases the use of sufficient activated carbon to deliver a palatable water to consumers at all times, might necessitate very high expenditures. If, however, the water works official will calculate the costs on an annual per capita basis, it will be realized that extremely high quantities of activated carbon can be used, even at a minor cost of only a few cents per capita per year.

The predominant point of carbon application is during coagulation or prior to sedimentation.

Since the start of the war, the use of activated carbon has increased very appreciably in many of the plants throughout this country. Investigations of such increased usages, has shown that greater attempts are being made to eliminate objectionable tastes and odors. During this war period, the general public is more critical of palatability in water supplies, often feeling that an objectionable taste or odor may be an indication of pollution. In order to avoid any mass hysteria where the public might seek some more palatable, but less safe water supply, greater efforts are being made by forward-looking water officials to deliver at all times a palatable water to the consumer.

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War Production Board—Office of War Utilities

Administrative Letters to All Utilities—J. A. Krug, Director

SUPPLEMENTARY UTILITIES ORDER U–1–h

SUPPLEMENTARY Utilities Order U–1–h, makes necessary a revision of procedures for coordinating utility line extensions and new construction by the customer who is requesting service. These were last outlined in the Administrative Letter of March 29, 1943, which is amended by the following instructions. These are applicable to all extensions authorized in U–1–d and U–1–h, as well as to extensions to provide service to dwellings whether or not authorized by U–1–d and U–1–h, if the customer to be served is applying for War Production Board authority to begin his construction.

Extensions to Serve Housing Other Than Farm Dwellings

If the extension conforms to the Housing Utilities Standards, irrespective of material cost, the utility prepares Form WPB–3348 when asked to do so by a constituent agency of the National Housing Agency or by the War Production Board, and gives three copies to the builder for attachment to his own application. When the utility receives notice that the builder's application has been approved (either through presentation of his approved application by the builder or through notice from a constituent agency of the National Housing Agency or from War Production Board) the utility proceeds with its construction except where the cost of material for the extension exceeds $5,000. In this latter case the utility, upon receiving notice that the builder's application has been approved, files an application on Form WPB–2774 with the Office of War Utilities in Washington and does not proceed with the construction until it has received approval on that form.

If the extension does *not* conform to the Housing Utilities Standards, and a constituent agency of the National Housing Agency requests that an appeal be filed, the utility may prepare Form WPB–2774. Three copies should be given to the builder to be filed with his own application. The utility may proceed with construction if the application on WPB–2774 is returned approved.

Extensions to Serve Projects Other Than Urban Housing

If the extension can be built under U–1–d or U–1–h, the utility prepares Form WPB–3348 when asked to do so by the appropriate agency (USDA War Board or District Office of War Production Board), and gives three copies to the builder for filing with his own application.

If the extension cannot be built under

U–1–4 or U–1–h, the utility prepares WPB–2774 when asked to do so by the appropriate agency, and gives three copies to the builder for filing with his application. The utility may proceed with its construction when the builder presents an approved application, except that, where WPB–2774 has been filed, it must await approval of that application.

Forms WPB–1290 (PD–545) and WPB–2710 (UF–26) are no longer to be used. The attached tabulation may be of assistance in clarifying the relationship of U–1–d, U–1–h, and the procedures just outlined.

Order U–1–h

Supplementary Utilities Order U–1–h permits, and gives priorities assistance for, the construction of a group of service extensions in a new area of dollar value. All other supplementary orders relate to extensions costing less than $500 ovehead, $1,500 underground. The extensions with which U–1–h is concerned costs more than these dollar limits but less than $5,000.

Three general classes of consumer premises are eligible for service under U–1–h. They are defined in paragraph (a) of the Order and may be described generally as follows:

The first class includes premises where construction or remodeling is being undertaken under authority of an application for priorities assistance or for permission to begin construction approved by the War Production Board; this class corresponds to the group of cases covered by U–1–d, the chief difference being that U–1–d extensions must not exceed the $500–$1,500 value limit.

The second class includes premises to be occupied exclusively by the Federal war agencies named in paragraph (a) (2) of U–1–h this class corresponds to consumer premises covered by U–1–a.

The third class of consumer premises which is eligible under U–1–h includes industrial or commercial establishments which are engaged in essential production or activities; this class corresponds to a group of cases already covered in the lower value field by U–1–f.

Utilities Order U–1–h has been issued in the form of a separate supplementary order, rather than by means of amendments of U–1, U–1–a, U–1–d, and U–1–f, for several reasons:

1. To make more clearly evident the provisions which apply to extensions authorized by the order.
2. To avoid complications in the provisions of U–1 which would be necessary if the provisions of U–1–h were incorporated in U–1, and
3. To make it clear that the restrictions of paragraph (f) of U–1 as to scheduling and acceptance of deliveries, withdrawals, and practical working minimum inventories are not affected by construction done under the provisions of U–1–h. Materials delivered or used for construction authorized by U–1–h are not deductible from the quotas established by paragraph (f) of U–1, and therefore should not be included in records of deliveries and withdrawals under U–1.

Material for the construction of the extensions authorized by U–1–h cannot be purchased with authority granted in U–1 because U– assigns a rating and provides an allotment symbol only for jobs which cost less than $500 over-

head, $1,500 underground. Accordingly, paragraph (c) of U–1–h assigns a preference rating and a CMP allotment number.

Paragraph (d) of U–1–h sets up restrictions on the manner in which material to be purchased with this preference rating or allotment number can be acquired. These are necessary because the restrictions of paragraph (f) of U–1 are not applicable to material for construction in excess of the $500–$1,500 value limits.

An important restriction in paragraph (d) is that of (d) (4) which does not permit material to be ordered, in cases where the War Production Board is processing an application filed by the builder of the structure to be served, until the builder's construction has received War Production Board approval. This provision is designed to prevent the accumulation of stocks of materials for U–1–h purposes.

It is probable that the largest number of extensions which will be built under U–1–h will fall into the first class, described in paragraph (a) (1). This class includes those cases where a builder, who will require utility services, has filed an application with the War Production Board for authority to begin construction or for priorities assistance. The procedure to be followed in such cases was described in detail in the Administrative Letter of March 29, 1943, which accompanied the issuance of U–1–d. (October 30, 1943.)

TITLE—NATIONAL DEFENSE

War Production Board

Part 4500—Power, Water, Gas and Communications

SUPPLEMENTARY UTILITIES ORDER U–1–h

§ 4500.9 *Supplementary Utilities Order U–1–h*—(a) *Permission to build certain extensions.* Notwithstanding the provisions of paragraph (h) (1) of Utilities Order U–1, extensions of electric, gas, water, and central steam heat facilities may be made or connected by a producer, subject to the restrictions of paragraph (b) below, to serve the following types of consumer premises:

(1) Premises which are being built or remodeled under authority of a specific authorization issued pursuant to Conservation Order L–41,

(2) Premises which will be occupied exclusively by the Army, Navy, Maritime Commission, War Shipping Administration or Civil Aeronautics Authority,

(3) Premises of an industrial or commercial consumer,

(i) In cases where the extension or enlargement of utilities facilities is necessary for the production of one of the products or the supply of one of the services listed in Schedules I and II of CMP Regulation 5 or

(ii) In cases where the consumer is an electric, gas, water, steam heat, telephone or telegraph utility; a person engaged in the business of producing, refining or marketing (except retail) natural gas or petroleum products; or a person engaged in the business of mining or burning refractories to whom a serial number has been assigned under Preference Rating Order P–56.

(b) *Restrictions on construction.* Extensions of the type permitted by paragraph (a) of this order may be built only if all of the following conditions are satisfied:

(1) The cost of material for any such utility extension does not exceed $5,000 but exceeds $1500 in the case of underground construction, or $500 in the case of other construction. No job or project may be subdivided to come within these limits.

(2) The extension does not duplicate an adequate service already installed or constitute a stand-by service.

(3) No other producer can render the same service with lesser amounts of critical material.

(4) In the case of extensions to buildings which are to be used exclusively for dwelling purposes the extension (including service drop or service pipe and any portion built by or for the consumer) can be built within the limits established by the Housing Utilities Standards issued by the War Production Board.

(5) In the case of extensions to premises which are to be built or remodeled under authority of a specific authorization applied for pursuant to Conservation Order L–41, the producer has completed Form WPB–3348 and delivered it to the builder for attachment to the builder's application for L–41 approval.

(c) *Assignment of preference rating and CMP allotment number.* (1) The preference rating AA–3 is hereby

assigned to orders for material other than controlled material, and the abbreviated CMP allotment number U–9 is hereby assigned to orders for controlled material, to be placed by a producer for use in the construction of extensions of facilities authorized by this supplementary order or to replace in inventory material so used.

(2) The preference rating and allotment number assigned above may be applied by a producer by using the certification provided in CMP Regulation 7.

(3) An order for controlled material bearing the CMP allotment number U–9 shall be deemed an authorized controlled materials order. This allotment number shall constitute an "allotment number of symbol" for the purpose of CMP Regulation 3.

(d) *Acquisition of material.* The acquisition of material for extensions of facilities authorized by this supplementary order is subject to the following restrictions:

(1) It may be ordered only to the extent that it is not available in the producer's inventory in excess of a practical working minimum.

(2) If taken from such excess inventory it may not be replaced.

(3) If taken from practical working minimum inventory it may be replaced therein, but only with the preference rating or allotment symbol assigned in paragraph (c) of this supplementary order.

(4) It may not be ordered until either

(i) The producer has been advised that the builder of the structure to be served has received L–41 approval, or

(ii) The producer has been advised by such builder that L–41 approval is not required and has received a written request from such builder to supply the utility service.

Issued this 30th day of October 1943.

WAR PRODUCTION BOARD,
By J. JOSEPH WHELAN,
Recording Secretary.

Construction Conservation Order L–41 Revised

A COMPLETELY re-drafted Order L–41, which limits construction, was issued in simplified form by the War Production Board Nov. 1, 1943. The new language of the order is intended to make the restrictions more easily understandable by the public.

In addition to simplifying the regulations and instructions, the revised order makes the following substantive changes:

1. The limit on farm construction, including residential, is placed at $1,000. Previously, there were separate limits, farm residences not being considered part of the farm unit.

2. A limit of $200 is placed on any type of construction for which a higher specific limit is not authorized by the order. This over-all limit formerly was $1,000.

3. The exception, originally made by L–41–b, for the insulating of buildings, has been liberalized in accordance with WPB policy relating to fuel oil conservation. On the other hand, the exception covering the conversion of heating equipment from oil to coal has been eliminated because of the tight coal situation.

4. Minor capital additions under CMP Reg. 5 in certain of the more essential industrial plants are excepted from the L–41 restrictions.

5. In calculating costs to determine if a job is within specified L–41 limits, the cost of used materials, or the value of labor furnished free, need no longer be included.

6. Cost limits now refer to the calendar year, instead of to any consecutive twelve months period.

7. Installation of plumbing equipment rated on WPB–2631 (formerly PD–851) is permitted if the cost is under $200.

8. Schedule B, listing various kinds of construction relating to operations of farms, railroads, utilities, mines, etc., which may be begun without WPB permission, has been altered in several respects. Drilling of water wells, certain radio facilities, and timber access roads financed wholly or in part by defense highway appropriations have been added.

With issuance of the revised L–41, Orders L–41–a, L–41–b, L–41–c, and Interpretation No. 1 are revoked inasmuch as their provisions are either incorporated into, or altered by, the new order.

L–41

CONSTRUCTION

Restrictions on war-time construction to conserve critical materials. Order completely revised November 1, 1943.

[Text of Order]

War requirements of the United States have created a shortage of all materials required for war production and construction necessary thereto, for private account and for export; the War Production Board accordingly has stated as its policy that it is in the national interest that all construction which is not essential, directly or indirectly, to the successful prosecution of the war, and which involves the utilization of labor, material or construction plant urgently needed in the war effort, be deferred for the duration of the emergency; the following order is, therefore necessary and appropriate in the public interest to conserve scarce materials by allocating them to essential uses and restricting their use in non-essential construction.

1075.1 CONSERVATION ORDER NO. L–41

(a) *What this order does.* This order limits construction. It is necessary in order to conserve materials, construction equipment, labor and transportation. In most cases, except where the construction is of a special kind, you must get permission from the War Production Board for construction. This permission (sometimes called "authorization to begin construction") must not be confused with preference ratings or priorities. If a construction job is allowed, either because it is not of the kind restricted by this order or because permission has been obtained, it may still be necessary to get preference ratings for the materials and fixtures which are needed. On the other hand, if you have ratings for materials, or materials on hand, you may still have to get permission to use them for a particular construction job.

(b) *What is meant by construction.* Construction covered by this order includes putting up or altering any sort of a structure, including a building, road, bridge, dam, sewer, and similar jobs; also the installing of equipment or fixtures. Certain special kinds of construction are excepted, as explained in paragraphs (c) and (d) below.

(c) *How much construction is allowed without getting permission.* You need not get permission under this order for construction which does not total more than the limits shown in the following list for all jobs begun in the same year. For an explanation of how to figure "cost," see paragraph (i). If a utility connection will be required (electricity, gas, water, steam or telephone), it may be necessary to get War Production Board approval for the connection. If so, approval for the connection must be obtained *before* beginning construction, even if the cost of construction comes within the limits. The limits for all jobs begun in the same year are as follows:

(1) $200 for a house, including the entire residential property.

(2) $1000 for a farm, including the farm house; a farm means a place used for raising crops, livestock, dairy products, poultry, etc., primarily for the market.

(3) $1000 for a hotel, apartment building or other residence for six or more families. Any residence for five or less families is considered a house under (1) above.

(4) $200 for an office, bank, store, laundry, garage, restaurant, or other retail service establishment, except that the limit is $1000 for a unit containing more than five establishments of this kind.

(5) $1,000 for a church, hospital, school, college, public playground for children, or for a publicly owned building or group of buildings used for public purposes.

(6) $1,000 for a bridge, overpass, underpass, tunnel, dock, pier, bus terminal or for a railroad or street railway building or group of buildings.

(7) $1,000 for an irrigation or drainage system serving more than one farm.

(8) $1,000 for a building or group of buildings which will be used for warehouse or for off-farm storage purposes.

(9) $1,000 for all monuments and structures on the same cemetery lot or for all cemetery buildings or structures in the same cemetery.

(10) $1,000 for a military exchange situated on a reservation of the Army or Navy.

(11) $1,000 for a building or group of buildings which will be used directly in furnishing any of the electric, gas, water or heating utility services listed in paragraph (a) (1) of Order U–1, and which will be owned by a utility producer as defined in that paragraph, or which will be used directly in furnishing communication services and which will be owned by an operator as defined in paragraph (a) (1) of Order U–2, or in paragraph (a) (1) of Order U–3, or which will be used directly for a sewage system and owned by a sewage system operator as defined in Order P–141.

(12) $5,000 for a factory, plant or other industrial unit which is used for the manufacture, processing or assembling of any goods, except that the limit is $200 if the goods are listed on Schedule A at the end of this order or if the productive floor area of the unit upon completion of construction is less than 10,000 square feet.

(13) $200 for any other kind of construction.

(d) *Special kinds of construction which do not require permission.* It is not necessary to get War Production Board permission under this order for the following kinds of construction:

(1) Maintenance and repair; that is, work necessary to keep a building or structure in sound working condition or fix it when it has become unsafe or unfit for service because of wear and tear; also the minimum work necessary to prevent more damage to a building or structure (or its contents) which has been damaged by fire, flood, tornado, earthquake, acts of war, or the like. Changes in material are permitted in doing maintenance and repair work. Additions, structural alterations, or the completion of unfinished parts of buildings are not considered maintenance and repair. Rebuilding or restoring after damage caused by fire, flood, tornado, earthquake, acts of war, or the like, is not permitted as maintenance and repair, but is permitted in some cases as explained below.

(2) The rebuilding or restoring of a house (including a farm house) or other residential building damaged or destroyed after July 1, 1943, by fire, flood, tornado, earthquake, acts of war, or the like, if the cost of rebuilding or restoring is less than $5,000.

(3) The rebuilding or restoring of farm buildings damaged or destroyed by fire, flood, tornado, earthquake, acts of war, or the like, if the cost of rebuilding or restoring is less than $5,000, where the immediate reconstruction is determined by the United States Department of Agriculture to be essential to the agricultural program.

(4) The rebuilding or restoring of a building or structure damaged or destroyed by disaster, where the Red Cross has been given priority assistance to restore the disaster area, and where the rebuilding or restoring has been determined by the Red Cross to be essential.

(5) Construction necessary to prevent threatened loss of farm products, where immediate construction is determined by the United States Department of Agriculture to be essential to the agricultural program.

(6) Construction owned by the United States Army, Navy, Maritime Commission, War Shipping Administration, Coast Guard, Marine Corps, Civil Aeronautics Authority, Coast and Geodetic Survey, or Panama Canal.

(7) Insulating buildings with materials such as storm windows and doors, pipe covering, loose fill, blanket or bat insulation,

plain or granule surfaced rigid insulation, and weather stripping.

(8) Installing plumbing or heating equipment rated on WPB–2631 (PD–851), if the cost of installation (not including the cost of the equipment) is less than $200.

(9) Grading, ditch-digging or similar earth-moving operations, if no cement, lumber or other building materials are used, except clay, tile and non-reinforced concrete pipe.

(10) Various kinds of construction connected with the operations of farms, railroads, utilities, mines, the petroleum industry, logging camps, chemical plants, steel mills and broadcasting facilities as listed in Schedule B.

(11) A construction job which began before this order originally became effective (April 9, 1942), or at a time when the job was not limited by this order, and has gone on without interruption.

(12) Construction jobs which are classed as minor capital additions under CMP Regulation No. 5 or under CMP Regulation No. 5A. This exception applies only to:

(i) Additions to factories, plants and other industrial units which will have a productive floor area of 10,000 square feet or more, and which are for the manufacturing, processing or assembling of goods which are not listed in Schedule A.

(ii) Hospitals.

(e) *All other construction forbidden without WPB permission.* No person shall do any construction which has not been permitted by the War Production Board, unless it is of a kind described in paragraph (c) or (d) above. This prohibition applies to a person who does his own construction work, to one who gets a contractor to do it for him, and to any contractor or subcontractor who works on the job or gets others to work on it. It also applies to any supplier who furnishes material for the job if he knows or has reason to know that the construction has not been permitted.

(f) *How to apply for permission.* (1) Schedule C at the end of this order shows the various types of application forms, and where they should be filed.

(2) In case of emergency, application may be made by wire or in person instead of on a printed form. It must be made to the office in which a written application for the same construction should be filed. The following information must be given:

(i) Cause of the emergency (fire, flood, etc.).

(ii) What the building or structure is used for.

(iii) Type of construction.

(iv) Why immediate construction is necessary.

(v) Estimated cost of construction.

(g) *Preference rating includes permission in some cases only.* There are some forms of preference rating orders and certificates which are issued or have been issued for special kinds of construction and which include permission for construction although they do not say so. These are listed in Schedule D at the end of this order. In all other cases, a preference rating is not enough, unless the instrument which assigns the rating also states that construction is permitted under this order.

(h) *Other restrictions on use of some items.* Permission for construction or the exception of any construction from this order does not relieve any one from complying with the various WPB orders or directives which restrict the use of copper and other scarce materials or fixtures. If you do not know about these restrictions, consult the nearest War Production Board District Office.

(i) *How to figure cost.* (1) For the purpose of determining whether a construction job may be started without getting permission from the War Production Board, "cost" means the cost of the whole construction job as estimated at the time of beginning construction, except that the cost of used material or used fixtures may be disregarded.

(2) If any materials or fixtures which have not been used are obtained without buying them, their value must be included as part of the cost.

(3) The cost of processing machinery or equipment need not be included but the cost of installing it and the cost of plumbing, heating, and air conditioning equipment and of all other equipment not used directly in the processing of materials must be included.

(4) The cost of labor must be included, but if labor is unpaid its value need not be included. Contractors' fees also must be included but architects' and engineers' fees need not be.

(5) All construction on the same unit must be included. The word "unit" means any group of buildings or structures (including roadways, pipelines, etc.) which are

situated near to each other, and which serve the same general purpose, or closely related purposes. For example, each of the following is a unit: a house, together with a detached garage, tennis court, swimming pool, etc.; a farm, including the farm house, barn, hen house, dairy, etc.; a manufacturing plant with a number of buildings used for the same or different processes, together with administration buildings, cafeterias, etc. In no case may a single building or structure be treated as more than one unit.

(6) The cost per year must be determined on a calendar year basis, beginning with January 1, 1943, except that a company which regularly keeps its books on a fiscal year basis may use the fiscal year.

(j) *Penalties for violations.* Any person who wilfully violates any provision of this order or who, in connection with this order, wilfully conceals a material fact or furnishes false information to any Department or Agency of the United States is guilty of a crime and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining any further deliveries of, or from processing or using, material under priority control and may be deprived of priorities assistance.

★ [*Order completely revised November* 1, 1943.]

SCHEDULE A

This schedule is referred to in paragraphs (c) (12) and (d) (12). In the case of a unit principally designed for the manufacture, processing or assembling of any of the following articles, the cost limit is $200 in any one year without getting permission:

(i) Athletic supplies, sporting goods, or toys or games.

(ii) Beverages, except milk.

(iii) Books, magazines, newspapers, greeting cards, or other printed or engraved matter.

(iv) Candy or chewing gum.

(v) Cigars, cigarettes, smoking or chewing tobacco or snuff.

(vi) Jewelry, watches, luggage, brushes, razors, pipes, and like articles for personal use or adornment.

(vii) Furniture, store fixtures, barroom fixtures, bowling alleys and the like.

(viii) Silverware, woodenware, household electrical appliances, draperies, rugs, and all other household appliance and equipment, but not including china and glassware.

(ix) Musical instruments.

(x) Stationery or office supplies.

(xi) Toiletries or cosmetic products as defined in Order L–171.

(xii) Wearing apparel of every sort, except for the Army or Navy and their auxiliaries, and except safety equipment or safety clothing as defined in Order L–114.

★ [Schedule A *as amended February* 19, 1943, *July 27*, 1943, *and November* 1, 1943.]

SCHEDULE B

Permission under this order is not necessary for the following kinds of construction which are referred to generally in paragraph (d) (10).

1. Construction on structures which are to be used directly in the discovery, development or depletion of mineral deposits.

2. Construction which is regulated by any petroleum administrative order issued by the Petroleum Administrator for War. (Construction of this kind is permitted only to the extent authorized by the applicable petroleum administrative order.)

3. Construction of telephone and telegraph facilities or equipment, other than buildings, if authorized or permitted under the terms of Order U–2 (§ 4501.1) or Order U–6 (§ 4501.21).

4. Laying railroad tracks, together with the construction of necessary operating facilities, but not including buildings, tunnels, overpasses, underpasses, or bridges.

5. Construction of facilities (other than buildings) which will be used directly in furnishing any of the electric, gas, water or heating utility services listed in paragraph (a) (1) of Order U–1 and which will be owned by a utility "producer" as defined in that paragraph.

6. Construction of facilities (other than buildings) which will be used directly for a sewerage system and will be owned by a sewerage system "operator" as defined in Order P–141.

7. Installation or erection of rationed farm machinery, or mechanical equipment, which has been obtained on a purchase certificate issued by a County Farm Rationing Committee under Food Production Order 14 of the War Food Administration, or of wire

fencing which has been obtained on PR 19 certification.

8. Drilling and casing of water wells, but excluding any use of pipe to conduct water on the surface.

9. Use by any logger or lumber manufacturer of lumber, nails, gravel, or clay products in construction needed to change the site of logging or lumbering operations; also the construction of timber access roads financed wholly or in part by defense highway appropriations.

10. Construction which is given priorities assistance under Order P–89 (relating to facilities for the manufacture of chemicals).

11. Construction which is given priorities assistance under Order P–68 (relating to facilities for the manufacture of steel).

12. Rearrangement or expansion of facilities and equipment, other than buildings, by an international point-to-point radio communication carrier to the extent that priorities assistance is granted under P–133 for such work.

★ [Schedule B *as amended February* 19, 1943 *and November* 1, 1943.]

SCHEDULE C

Application forms to be used in obtaining permission to begin construction under L-41 and where to file them, unless otherwise instructed. These forms are to be used whether or not priorities assistance or controlled material allotments are required.

Types of construction	Application form	Where filed
Farm construction, including farm buildings:		
Total cost less than $10,000	WPB-2570 (formerly PD-200-C)	Department of Agriculture County War Board having jurisdiction over the site.
Total cost $10,000 or more	WPB-617 (formerly PD-200)	Department of Agriculture County War Board having jurisdiction over the site.
War Housing owned by FPHA	Letter	WPB, Washington, D. C.
Housing for 5 families or less per building:		
Total cost less than $10,000 or construction consisting only of remodeling or rehabilitation.	WPB-2896 (formerly PD-105) and WPB 2897.1.	FHA Field Office having jurisdiction over the site.
Total cost $10,000 or more (except remodeling or rehabilitation).	WPB-2896 (formerly PD-105) and WPB-2897 (formerly PD-105A).	FHA Field Office having jurisdiction over the site.
Hotels and apartment houses for six or more families providing additional living quarters for war workers:		
Total cost less than $10,000 or construction consisting of remodeling or rehabilitation.	WPB-2896 (formerly PD-105) and WPB-2897.1.	FHA Field Office having jurisdiction over the site.
Total cost $10,000 or more (except remodeling or rehabilitation).	WPB 2896 (formerly PD-105) and WPB-2897 (formerly PD-105A).	FHA Field Office having jurisdiction over the site.

Types of construction	Application form	Where filed
Hotels and apartment houses for six or more families not providing additional living quarters for war workers:		
Total cost less than $10,000	WPB-2570 (formerly PD-200-C)	WPB District Office having jurisdiction over the site.
Total cost $10,000 or more	WPB-617 (formerly PD-200)	WPB, Washington, D. C.
Public Roads	PR 1 PA	State Highway Department having jurisdiction over the site.
Water, gas, steam, electricity, telephone facilities for use by the public.	WPB-2774	WPB, Washington, D. C.
Factories, plants and other industrial units:		
Total cost less than $10,000	WPB-617 (formerly PD-200)	WPB District Office having jurisdiction over the site.
Total cost $10,000 or more	WPB-617 (formerly PD-200)	WPB, Washington, D. C.
All other kinds of construction:		
Total cost less than $10,000	WPB-2570 (formerly PD-200-C)	WPB District Office having jurisdiction over the site.
Total cost $10,000 or more	WPB-617 (formerly PD-200)	WPB, Washington, D. C.

The "total cost" as used in the above schedule includes used materials and fixtures, processing machinery and equipment and architects', engineers' and contractors' fees although these are not included in "cost" for purposes of determining how much can be constructed without permission under paragraphs (c), and (d) of the order.

—[Schedule C *added November* 1, 1943.]

SCHEDULE D

The following preference rating orders or certificates are referred to in paragraph (g). If you have received one of these orders or certificates for your construction, the construction is permitted by the WPB.

P-19-e	Relating to public roads.
P-19-h, P-19-i, CMPL-127, CMPL-224	Relating to projects important to the war effort or essential civilian needs.
P-55-b	Relating to privately owned programmed war housing.
WPB-2774	Relating to utility facilities.
PD-3A, WPB-542	Relating to command construction and certain construction of the Corps of Engineers.
P-14-a, P-14-b, P-19, P-19-a, P-19-d, P-19-g, P-41, P-55, P-55—amended, P-110, PD-3	These orders and certificates are no longer used, but jobs which were authorized by them may go on.

★ [Schedule D *added November* 1, 1943.]

Important Deferment Policy

THE Selective Service Memorandum which follows establishes a procedure which may be used by water works executives to obtain deferment of registrants who hold key positions. Every word of the text should be read with care.

Remember these facts: (1) The Water Supply Industry has been designated as an essential activity in W.M.C. Occupational Bulletin 30. (2) W.M.C. General Order 10 (August 16, 1943) lists 149 occupations in all civilian fields which are "critical." In this list are the following titles applicable to water works employees: Accountant, Bacteriologist, Boilermaker, Bricklayer (refractory), Chemist, Electrician, Engineer (professional or technical), Engineer (Turbine or Diesel), Engineering draftsman, Foreman, and Machinist. W.M.C. Order 10 should be consulted for full information.

The order which follows *directs* a Draft Board which has a "critical" employee's case before it, to refer his case to the U.S. Employment Service. If it appears that there are no persons available for employment who could be hired to do the work the critical registrant is doing, the local board must permit the filing of a new form 42A by the employer and consider the evidence submitted as a basis for further occupational deferment.

The Water Works executive who has such a situation to handle should deal just as frankly with the U.S. Employment Service as with the Draft Board.

SELECTIVE SERVICE SYSTEM LOCAL BOARD MEMORANDUM NO. 115B

SUBJECT: REGISTRANTS IN CRITICAL OCCUPATIONS

1. Importance of critical occupations.—Attached to Local Board Memorandum No. 115, amended August 16, 1943, is a List of Critical Occupations. Only 149 occupations are included on the list, and it is estimated that there are not more than 400,000 registrants of military age throughout the country who have the skills required of the critical occupations. This number is exceedingly small in comparison to the total working force in industry. It can be safely said that the critical occupations as listed by the War Manpower Commission represent the highest levels of skills within industry and that, therefore, all production necessary to the war effort is directly dependent upon the most efficient use within industry of persons qualified in these occupations.

2. Need for extending every consideration for occupational deferment to registrants in critical occupations.—It is of the utmost importance that registrants (1) who have

the necessary qualifications, (2) who are utilizing them to the fullest extent in a critical occupation in war production or in support of the war effort, and (3) whose removal from their present employment would have an adverse effect upon the maintenance of required production schedules, be given the most serious consideration for extended occupational deferment before being reclassified out of a deferred classification into a class available for service.

3. **Referral to United States Employment Service.**—(a) Local boards are directed that whenever, after the most careful consideration, they conclude a registrant who is alleged to be in a critical occupation in war production or in support of the war effort is not entitled to occupational deferment on the basis of his present employment, to refer the registrant's name and present occupation, together with a statement of his skills and qualifications and place of present employment, to the local office of the United States Employment Service in the area in which the local board is located.

(b) This reference is mandatory and will be accomplished—

(1) If no appeal is taken, upon the expiration of the period afforded the registrant to take an appeal following classification of the registrant in Class I–A, or

(2) If an appeal is taken, upon the return of the file to the local board with the decision that the registrant is continued in Class I–A on appeal.

(c) In all such cases, local boards will delay the issuance of an Order to Report for Induction to such registrant for 30 days from the date of referral to the United States Employment Service.

(d) If, during such 30-day period, the United States Employment Service certifies to the local board that—

(1) The registrant possesses and is fully employing the qualifications required of a critical occupation in war production or in support of the war effort and his removal from his present employment would adversely affect the maintenance of his employer's required production, or

(2) The United States Employment Service has succeeded in placing the registrant in a critical occupation in war production or in support of the war effort with another employer who requires the registrant's skill and qualifications and will fully utilize such skills and qualifications,

the local board will delay the issuance of an Order to Report for Induction to such registrant for a further period of 10 days from the receipt of such certification so as to permit the filing of a new Form 42A requesting the occupational deferment of the registrant.

(e) In the event that either a Form 42A is filed by a new employer with whom the registrant has been placed or certification is received from the United States Employment Service stating that the registrant is necessary in his present employment, the local board will reopen the classification of the registrant and will consider the new evidence as a basis for further occupational deferment.

(f) If, however, no notification is received from the United States Employment Service prior to the expiration of the original 30-day period following referral or, in the event certification is made, that the registrant is needed in new employment but a Form

42A is not received before the expiration of the 10-day period allowed for the filing of a new claim for deferment, the local board may proceed with the induction of the registrant.

4. Co-operation by United States Employment Service.—The War Manpower Commission is informing the United States Employment Service of the need for expediting investigation of the cases of any registrants qualified for critical occupations which are referred to it by local boards. Even though a registrant is not employed in the area in which his local board is located, reference by the local board will, nevertheless, be to the local United States Employment Service office in the local board area, and any further reference of the case to the United States Employment Service office in the area in which the registrant is employed will be undertaken and accomplished by the United States Employment Service.

5. Registrants between ages of 1 and 25 in critical occupations.—Me who are utilizing their full skills i critical occupations when the necessit for their continued retention is clear demonstrated by their employer shoul be considered as registrants who ar utilizing the highest skills or profes sional qualifications, which is the ex ception to the general policy expresse in Local Board Memorandum N 158–A, requiring the release of regis trants between the ages of 18 and 2 during the first 6 months of a replace ment schedule. In the lower age brackets, however, employers should b required to supply complete evidenc that the registrant's qualifications an skills are exceptional, are being full utilized, and cannot be replaced.

LEWIS B. HERSHEY,
Director.

Issued 9/1/43

Field Reports on "Water Conservation"

WE are receiving some fine letters and comments from water works men about "Water Conservation," much of it good constructive thought and sound horse-sense." We quote from the November house magazine "Sparks and Splashes," of the Kalamazoo (Mich.) Light and Water Utilities, some clever and timely lines on the subject, which were written by public relations director George E. Martin:

Stop the Drip—or Don't be One

"TURN IT OFF! Save water—don't be a drip! Don't waste even a little sip. It may create a bomb to rip . . . A nice big hole in a Nazi ship . . . Or send to the bottom a slippery Nip.—For all duration make this a rule—Save water in home, in factory, school . . . Save tons and tons of needed fuel . . . Add iron and copper to war's big pool . . . And rid the world of its biggest fool.—We've water a plenty, but none to waste . . . By saving essentials our army's braced . . . For the greatest problem we've ever faced: To end this war in the greatest haste . . . Help speed the peace—stop water waste!"

Mr. John A. Goetz, Supt. of the Water Dept., Matoon, Ill., writes:

"I was glad to receive the literature on water conservation . . . Conservation of water ought to be practised all of the time, just as is the case with power, oil, gas, fuel, etc., for it requires energy to produce and if wasted it is wasted effort. But it shouldn't require a war to make us conscious of this, for the mere impulse to do something about it at a time when the materials necessary to stop it are not available, will not get far past the talking stage.

"During a war the spirit of patriotism may move a few of us to do all of the things that the government asks, but in our way of living, habits acquired over the best part of a lifetime are not easy to change. We don't like to be dictated to, too much. Witness the scramble too, to get a little more gas, more steaks, a little more of anything that is rationed; and then we wonder why people don't rush to a plumber to have a faulty float valve, a leaky stop and waste valve, or even a sizeable leak on pipeline repaired, unless it affects the pocket book, or gets so bad water service is affected.

"The real effective way to conserve water is to have every service metered and then to make at least periodic leak surveys not more than six months apart. But a leak survey in a city in which the mayor is elected on a platform that he will not impose meters on the populace accomplishes only what the city itself will undertake in repairs. I know of such places where the pumpage is at least double what it would be if services were metered. I believe that in a completely metered system only the industrial and railroad water users are the usual wasters

and the water works that does not find and repair its own leaks ought to be place under a management that will do so.

"Leak detection is a simple and easy matter *if* it is done continually an not allowed to get out of hand. A trained man can take a $3.00 or $4.00 son scope and find the leak, but when a half dozen or more leaks develop in the sam locality, then it becomes quite a problem to locate them. Incidently, finding leak on cast iron mains is an event, substantially all of them being on servi connections, lead goose-necks and steel pipe. Fire hydrants *must* be service once a year, or they may not function when needed, so there should not be an leaks of consequence from that source. With a high domestic rate—48 cents pe thousand gallons— our people do not waste it. And we are sure of this becaus the average domestic bill is about 2800 gal. per month.

"Up to last May we read meters and billed on a monthly basis, but hav since changed to bi-monthly reading and billing, except for industrial and rai road use. Our meter readers will now have time to spend on leak detection an make it continuous, all year round. If at all possible, this is the better procedure since leaks do not wait for a survey, but may and do happen right after it i made. The customer will also benefit, for a leak going through a meter will b found sooner." (*Editor's Note.* We would like to hear from other wate works men what they have done to conserve water.)

Willing Water as Your Salesman

Why not let Willing Water work for you on your letterheads, your bill and in your newspaper and other advertising? We hope he will become th trademark of the water works industry and a familiar and welcome friend, ass ciated in the minds of your customers with the product you have to sell—wate service. This is your merchandise. Willing Water is a good salesman and h will tell your story for you both helpfully and amusingly.

You can order Willing Water in any of the positions illustrated by numbe and title, and in forms, sizes and at prices as follows:

Titles

1. Ready at Any Hour.
2. Service With a Smile.
3. Makes Housework a Pleasure.
4. The World's No. 1 Dirt Remover.
5. Top Cleaner.
6. Speedy Service.
7. Fire's Master.
8. Cheap at Half the Price.
9. Low Insurance Salesman.
10. The Fireman's Best Friend.
11. Keeps the Doctor Away.
12. No Substitute for Water.

Size	*Cost Mat*	*Cost Stereotype*	*Cost Blocked Electrotype*
1 × 1¼ in.	$ .25	$ .60	$1.75
2 × 2¼ in.	.25	.60	2.00
3 × 3¼ in.	.25	.60	2.50

Send your orders to the American Water Works Association, 500 Fifth Ave. New York (18), N.Y.

Let Willing Water Tell Your Story

The 1943 Conference at Cleveland

ONE of the A.W.W.A. members who attended the 1943 Conference of the A.W.W.A. at Cleveland from June 15 through June 18 called it a "burning success." That was a polite way of recording the fact that the days were hot and several of them ended with thunderstorms of the good middle-western window-rattling variety. But the good nature of water works men requires more than hot days and thunderstorms to overcome it. They remember that similar afternoon storms take the load off the pumps at the end of a peak day and they accept them as useful events even during an annual conference.

The attendance at A.W.W.A. conventions, since the pay-as-you-register plan went into effect has been as follows:

Year	*City*	*Total Registered*	*Year*	*City*	*Total Registered*
1929	Toronto	1,104	1936	Los Angeles	891
1930	St. Louis	1,021	1937	Buffalo	1,140
1931	Pittsburgh	1,076	1938	New Orleans	1,123
1932	Memphis	712	1939	Atlantic City	1,290
1933	Chicago	660	1940	Kansas City	1,467
1934	New York City	891	1941	Toronto	1,445
1935	Cincinnati	901	1942	Chicago	1,438
			1943	Cleveland	1,131

The 1943 Convention Management Committee consisted of:—

Representing the A.W.W.A.

WM. J. ORCHARD, *Chairman*
REEVES NEWSOM
GEORGE W. HAMLIN

Representing the W. & S. W. Mfrs. Assn.

CLINTON INGLEE
CHAS. A. MCGINNIS

EX-OFFICIO

ABEL WOLMAN, Pres., A.W.W.A.
HARRY E. JORDAN, Secy., A.W.W.A.
LINN H. ENSLOW, Chr., Publ. Comm.
D. F. MCAFEE, Pres., W. & S. W. Mfrs. Assn.
ARTHUR T. CLARK, Secy., W. & S. W. Mfrs. Assn.

Ohio Section. The Ohio Section gave magnificent support to the Convention Management Committee. The Section's committee chairmen and co-chairmen were:

Local Convention Committee:	Geo. W. Hamlin Harvey P. Jones Wendell R. LaDue
Local Host Committee:	Rollin F. MacDowell Hayes R. Kuhns
Local Transportation Committee:	J. C. Simmermacher John A. Marsh
Presidents Reception and Dance:	Mr. & Mrs. Geo. W. Hamlin Mr. & Mrs. Wendell R. LaDue
Post-War Planning Committee:	Frank C. Tolles Deming Bronson
Dinner-Dance:	Mr. & Mrs. Harvey P. Jones Mr. & Mrs. F. P. Fischer
Ladies Sub-Committee on Entertainment:	Mrs. F. P. Fischer
Ladies Hostess Committee:	Mrs. L. A. Marshall
Ladies Luncheon & Tour:	Mrs. Harvey P. Jones
Ladies Luncheon and Bridge:	Mrs. Wendell R. LaDue

The Host Committee gave unprecedented service to the registration staff. Under the leadership of MacDowell and Kuhn, members of the Section were on hand at all registration hours to welcome the conference guests and to acquaint them with the program that had been prepared for them. The services of a well organized local host committee at the registration desk are of the highest importance and value in getting a conference under way.

Attendance. The recorded paid attendance at the Cleveland Conference, while greater than anticipated for the second war year, was over 300 less than at Chicago in 1942. The effect of the war upon conference transportation is shown by the breakdown of methods used to reach the last three annual meetings:—

	Toronto 1941 per cent	*Chicago 1942 per cent*	*Cleveland 1943 per cent*
Railroad	36.0	62.9	72.5
Automobile	53.2	16.0	15.3
Plane	3.4	2.0	0.8
Bus	0.3	0.6	0.6
Boat	0.3	—	2.5
Regional (local)	6.8	18.5	8.3
	100.0	100.0	100.0

The ratio of registrants attending all entertainment events, to the group who registered for meeting only during the past seven annual meetings, is as follows:

City	*Year*	*All Events per cent*	*Meetings Only per cent*
Buffalo	1937	79	21
New Orleans	1938	78	22
Atlantic City	1939	66	34
Kansas City	1940	68	32
Toronto	1941	71	29
Chicago	1942	63	37
Cleveland	1943	68	32

The Office of Civilian Defense took advantage of the gathering of water works men and arranged a conference of its engineering staff on Monday and Tuesday prior to the opening of the A.W.W.A. sessions. Meeting rooms and other facilities were provided for them. Maj. Gen. U. S. Grant, Chief of the Protection Division of the office of Civilian Defense participated in the staff deliberations along with Dr. Geo. Baehr, Chief of the Medical Divison, and other key personnel.

Conference Program. As in 1942, the technical sessions were keyed to the fullest possible extent to the wartime problems of water works. J. A. Krug, Chief of the Office of War Utilities again addressed the membership in a capacity session. Major General U. S. Grant of the office of Civilian Defense and Arthur Collins of Westminister, England, recounted various aspects of civilian defense problems. From Missouri came J. Grant Frye, the attorney for the City in the Illmo tank repair case to tell of "Battling the Tank Racket." Five water works superintendents read prize winning papers related to wartime operating efficiency. Funds amounting to $150.00 provided by C. M. McCord of Memphis, were distributed to the participants in the following order:

Timothy Good, Cambridge, Mass. and Kenneth K. King, Kansas City, Mo.	Co-winners of first and second prizes
William R. Schnabel, Allentown, Pa.	Third prize
H. V. Pederson, Marshalltown, Iowa.	Fourth prize
LaVerne Trentlage, Elgin, Ill.	Fifth prize

Entertainment. Mr. and Mrs. Fred P. Fischer of Cleveland master-minded the arrangements for entertainment of the men and women attending the conference. A professional hostess assisted Mrs. Fischer in handling the details of the ladies events—much to the satisfaction of all concerned.

Exhibits. The Grand Ball Room of the Statler Hotel was not large enough to house the exhibits set up by water works manufacturers and the overflow occupied much of the mezzanine floor of the hotel. Even in wartime with only limited exhibits, it is not easy to find hotel accommodations sufficiently large to house the available water works exhibit material.

Presentation of Awards

Honorary Membership was conferred upon Messrs. George C. Bunker, William R. Conrad and William W. Hurlbut. The citations were:

George C. Bunker, Consulting Engineer, now residing in Caracas, Venezuela, a member of the Association since February, 1911. A North American engineer of great competence, who for many years has practised his profession in Central and South America, bringing honor to himself and to his native land.

William R. Conrad, Engineer and Consultant of Burlington, N.J., a member of the Association since June, 1904; past Chairman of the New Jersey Section and a leader in important standardization work of the Association; for more than fifty years a testing engineer whose independent judgment has been accepted by both manufacturers and consumers.

William W. Hurlbut, Assistant Chief Engineer and General Manager of the Bureau of Water Supply, Department of Water and Power of Los Angeles; member of the Association since May, 1924, Director 1934 to 1936 and 1938. President in 1937; recipient of the Diven Medal in 1941 and the Fuller Award in 1941; honored in the field of water supply engineering and particularly distinguished for his leadership in the development of specifications and standards for steel water pipe.

Mr. Edward S. Cole was voted an Honorary Membership by the Board of Directors at the Cleveland Conference with the citation as follows:

Edward S. Cole, President of The Pitometer Company of New York, a member of the Association since 1902, Chairman of the Water Consumption Committee 1913–17, past-chairman of the New York Section; for his development of methods for the measurement of water and the control of water waste —both valuable contributions to the efficiency of water works operation.

As Mr. Cole was unable to attend the Cleveland Conference, he was presented the award at a luncheon given in his honor September 27 in New York, by President Samuel B. Morris.

The John M. Diven Medal, annually awarded to the member whose services to the Association are deemed most outstanding, was presented to Earl Devendorf, with the following citation:

Mr. Earl Devendorf for his fine leadership of the Mutual Aid Activities in the State of New York. As Associate Sanitary Engineer of the New York State Department of Health and later State Water Co-ordinator, Mr. Devendorf has organized the Mutual Aid Program upon a fully co-operative basis, bringing into the work a large number of members of this Association who are water works executives in the state. Participating with these water works executives have been many engineers of New York State Department of Health who, to the degree that they have contributed to the Mutual Aid Program, share in the honor conferred upon the recipient of this award. The development of the Mutual Aid Program in the water works field has been a conspicuous activity

in many states and is, in effect, the most outstanding service and advancement in the field of the year. Likewise, therefore, all other state leaders in Mutual Aid are honored by the conferring of this medal upon Mr. Devendorf.

The John M. Goodell Award, for the best paper published in the JOURNAL of the Association, was presented to:

Mr. Wilfred F. Langelier and *Mr. Harvey F. Ludwig* for their paper in the March, 1942 issue of the JOURNAL entitled "Graphical Methods for Indicating the Mineral Character of Natural Waters." In this paper the authors review the various methods that have been offered for graphical presentation of data related to the mineral content of water; describe a single point method for graphing and classifying waters for mineral content; and exhibit a classification of 68 large U.S. water supplies based upon their method. The paper is considered a fitting addition to water examination literature to which Professor Langelier has already made a significant contribution in his previous (1936) paper entitled "The Analytical Control of Anti-Corrosion Water Treatment."

George W. Fuller Memorial Award certificates were presented to the following members:

California Section—*Carl McKee Hoskinson:* In recognition of his loyalty and devotion to the Association; and for his numerous and untiring services to the Association, the Section and the community in which he lives.

Canadian Section—*Norman Joseph Howard:* For his exemplary leadership and noteworthy contributions to research in water treatment, particularly the development and application of superchlorination and taste control measures and for his aggressive support of Association activities.

Florida Section—*John Robertson Hoy:* For his tireless promotion of membership in the Florida Section, his active participation in the annual Short Course in Water Treatment and his distinguished service to the water works men of Florida.

Four States Section—*Seth Morton Van Loan:* For his long and valuable services to the water works field, the City of Philadelphia, the Four States Section and the A.W.W.A.

Illinois Section—*Louis Richard Howson:* For his unselfish devotion and outstanding services to the Association and the Illinois Section; and in recognition of his effective leadership which has contributed so greatly to the advancement of the Illinois Section.

Indiana Section—*Cecil Kirk Calvert:* In recognition of long and faithful services to the Association and the Indiana Section; and his outstanding work in the field of water purification and taste control.

Kentucky-Tennessee Section—*Claude Manley McCord:* For his inspiring leadership; noteworthy contributions and unselfish interest in the advancement of water works practice, particularly in the estimating and metering of water.

Michigan Section—*Edward Dunbar Rich:* For his thirty years of kindly counsel and leadership and for the far-reaching policies he instituted as Director of the Engineering Bureau of the Michigan Dept. of Health, which have freed the state of water-borne typhoid for the past eight years.

Minnesota Section—*Arthur Franklin Mellen:* For his leadership in organizing the Water Works School in Minnesota and for his valuable and unselfish services to the Minnesota Section and the community in which he lives.

Missouri Valley Section—*William Victor Weir:* For his exceptional activity in the affairs of the Association and the Missouri Valley Section and for his many contributions toward the improvement of the water works profession as a whole.

Montana Section—*Eugene Carroll:* In recognition of his engineering skill and achievements, his long and unselfish service and valuable contributions to the water works profession and the Montana Section of the A.W.W.A.

New Jersey Section—*Samuel Frank Newkirk Jr.:* For his many services to the Association and the New Jersey Section which he helped to organize; and for his outstanding work as Chairman of the Association's Committee on Meters.

New York Section—*Earl Devendorf:* In recognition of outstanding service to the water works profession through the New York State Dept. of Health; for his constructive leadership as State Water Co-ordinator, and for his untiring efforts as State Consultant to Federal agencies in connection with water supply projects.

North Carolina Section—*Walter McKinney Franklin:* For his untiring efforts and noteworthy accomplishments in promoting the membership of the North Carolina Section; for his conspicuous and unselfish services to the Section and the North Carolina Water Works Operators Association; and for his ever-ready spirit of co-operation and inspiring example to all water works men.

Ohio Section—*Charles Potter Hoover:* For his outstanding service in the field of water purification and softening and for his unselfish assistance to water works men, not only in Ohio, but throughout the nation for a period of thirty years.

Pacific Northwest Section—*Charles Clifford Casad:* In recognition of his fine character, personality and ability; for his outstanding work in the development of an adequate water supply in Bremerton, Washington; and for his devotion and service to the Pacific Northwest Section.

Rocky Mountain Section—*Delbert Pinkney Porter* and *Leonard Oliver Williams Jr.* In recognition of their valuable contributions to the advancement of the Section, their devoted services to the Section, and untiring efforts in the organization and conduct of its Water Works School.

Southeastern Section—*Borden Prather Rice:* In recognition of his outstanding services to the Southeastern Section of the A.W.W.A. and to the field

of public water supply, particularly his activities related to training schools; and for his untiring efforts in advancing the prestige of the water works profession.

Southwest Section—*Egmont Schermerhorn Smith:* For his aid and support of the water works schools in the southwest states and for his long and faithful services to the Southwest Section.

Virginia Section—*Eugene Frank Dugger:* In recognition of his long and continued interest in engineering development, in water works practice, the affairs of the Association; and his loyal support in promoting the progress of the Section.

West Virginia Section—*Mentor Hetzer:* For his inspiring example of the highest principles of water works management and for his devotion to the West Virginia Section and the Conference on Water Purification.

Wisconsin Section—*William Urnn Gallaher:* For his faithful and valuable services to the Wisconsin Section, particularly his promotion of the operator's license law; for his noteworthy improvements to the Appleton Water Works and his meritorious service with the State Board of Health.

No Fuller Memorial Awards were made by the Cuban and New England Sections during the last Association year.

The Nicholas S. Hill Cup, awarded annually to the Section having the greatest percentage gain in membership from one general meeting to the next, was won by the North Carolina Section. Its point score was 70.890. Second and third, respectively, were the Southwest Section (point score 46.330) and the Indiana Section (point score 35.316).

The Henshaw Cup, awarded annually to the Section having present at its annual meeting the greatest precentage of its membership, was won by the Minnesota Section. At its 1942 meeting, 73.33 per cent of its membership attended. Second and third, respectively, were the Montana Section (67.39 per cent) and the Pacific Northwest Section (63.72).

The Old Oaken Bucket remains in the possession of the California Section. This conference was the fifth at which the award for top Section membership has been made, and the fifth time that the California Section (567 members) received the award.

Schedule of Conference Papers and Reports

Plant Management & Operation Division—2:00 P.M.—June 15, 1943

Panel Discussion—The Quarter Century's Water Supply Development in Cleveland.....
A. G. Levy, L. A. Marshall and S. C. Simmermacher
Water Supply Practice in Army Training Centers.....
L. H. Kessler, V. Bruce Sundstrom and Arthur O. Tomek
A Study of Job Classifications and Titles in the Municipal Water Works Field..Albert R. Davis
A Recommended Form of Contract for Elevated Tank Painting.....Louis R. Howson

Water Purification Division—2:00 P.M.—June 15, 1943

Loadings and Capacities for Water Treatment Plants—Committee Report..A Clinton Decker
Control of Chlorination—Committee Report.....C. K. Calvert
Two New Developments in the Water Conditioning Field.....S. B. Applebaum
The Extent of Use of Activated Carbon—Review of the U.S.P.H.S. Survey.....E. A. Sigworth
War Problems in Analysis and Treatment of Water.....
A. M. Buswell, R. C. Gore, H. E. Hudson, T. E. Larson and A. C. Wiese
Discussion of Problems Confronting the Water Purification Division of the American Water Works Association.....*Led by* Marsden C. Smith

General Session—9:30 A.M.—June 16, 1943

Civilian Defense and Public Water Supply.....U. S. Grant 3rd
The Plans and Policies of the Office of War Utilities.....J. A. Krug
Administrative Practices of the Water Division—Office of War Utilities....Arthur E. Gorman

General Session—2:00 P.M.—June 16, 1943

Fundamentals of University Hydraulics Education.....Samuel B. Morris
Experience With the Use of a New Type of Concrete Pressure Pipe.....
W. W. DeBerard and Wm. B. Weldon
Good Practice in Laying Concrete Pipe.....Louis R. Howson
Studies of Coating Materials for Cast-Iron Pipe.....L. G. Lenhardt
Discussion..Thos. H. Wiggin, James T. McKenzie, Robt. C. Wheeler and Leonard P. Wood
Battling the Tank Repair Racket.....J. Grant Frye

Finance & Accounting Division—2:00 P.M.—June 16, 1943

Social Security Legislation—Pending and Proposed.....Dale Maffitt
Commission Controlled Water Department Operation:
Ontario Practice.....Wm. Storrie
Wisconsin Practice.....L. A. Smith
Discussion—How Can a Fair Comparison of Water Rates Be Made?.....
Led by W. Victor Weir and M. F. Hoffman

Special Session—8:30 P.M.—June 16, 1943

The Relation of Public Water Supply to the Postwar Program.....
Willard Chevalier and Abel Wolman

General Session—9:30 A.M.—June 17, 1943

Manpower and Selective Service Problems . . . . P. B. Nile
The War's Effect on English Local Government . . . . Arthur Collin
Labor Relations in the Public Water Supply Field . . . . James W. Irwi
Panel Discussion . . . Chas. L. Alfke, Walter S. Byrne, Carl A. Eberling and Dana Van Duse

Steel Pipe Committee—9:30 A.M.—June 17, 1943

Report of Current Activities of the Steel Water Pipe Committee . . . . Wm. W. Hurlbu
A.W.W.A. Manual for Design and Installation of Steel Water Pipe Lines:
Outline of Design Factors . . . . Russell E. Barnar
Outline of Installation Procedure . . . . Wm. W. Hurlbu
Field Welding of Steel Water Pipes . . . . H. Arthur Price and G. H. Garre
Mechanical Joints for Water Lines . . . . Elson T. Killa

Plant Management & Operation Division—2:00 P.M.—June 17, 1943

How "Our Town" Met the War Emergency—Superintendents' Prize Contest:
Economical Addition to Cambridge, Mass., Supply . . . . Timothy W. Goo
Kansas City Improvements Meet Wartime Conditions . . . . Kenneth K. Kin
Water Saving Survey in Allentown, Pa . . . . William R. Schnabe
The Problem of a Diminishing Demand at Marshalltown, Iowa . . . . H. V. Pederse
How the Meter Division Met Wartime Emergency Conditions in Elgin . . . LaVerne Trentlag
New Materials for Postwar Use in the Water Works Field . . . . W. Victor We
Experimental Studies of Saran as a Service Line Material . . . F. M. Dawson and A. A. Kalinsk

Water Purification Division—2:00 P.M.—June 17, 1943

Symposium—Fluorides and Dental Health:
Domestic Water and Dental Caries . . . . H. T. Dea
The Public Health Significance of Dental Deficiencies . . . . H. J. Knap
What Are the Responsibilities of Public Water Supply Officials in the Correction of Dent
Deficiencies . . . . Abel Wolma
A Program of Treatment of Public Water Supply to Correct Fluoride Deficiency . . . . David B. As

Plant Management & Operation and Finance & Accounting Divisions—9:30 A.M.—June 18, 1943

The Use of Motion Pictures in a Public Relations Program:
Syracuse, N.Y. . . . . E. P. Stewar
Indianapolis, Ind. . . . . H. S. Morse and J. E. Kleinhen
Hackensack, N.J. . . . . C. J. Alfke and P. A. Pall
The Deluge—A Radio Play . . . . *Script by* A. F. Dappe

Water Purification Division—9:30 A.M.—June 18, 1943

Symposium—Water Quality Standards:
The Dominion of Canada Standard . . . . Norman J. Howar
The U.S. Public Health Service Standard:
From the State Sanitary Engineer's Viewpoint . . . . F. H. Warin
From the Plant Group Viewpoint . . . . G. D. Norcon
From the Operator's Viewpoint . . . . R. F. Goudey and C. K. Calver
Resume . . . . C. R. Cox and J. K. Hoskin

Papers Scheduled at Section Meetings

THERE follows a summary-listing of papers scheduled for presentation at Section Meetings during 1943. The dates of the Section meetings from 1939–43 and locations for 1943 are given on page 1629. A record of membership totals at the time of, and attendance at, the meetings in 1939–43 is presented on page 1630. Section officers who were elected at meetings held during 1943 and who will be holding office on January 1, 1944 are listed on page vi of this JOURNAL. The listing that follows is chronological and not alphabetical by Sections.

Minnesota Section—Scheduled Papers—March 12–13, 1943

Address of Welcome ..... *Mayor* Marvin L. Kline
Pollution of Water Supplies in Limestone Formation ..... S. P. Kingston
Chemicals and Gases Found in Ground and Surface Waters in Minnesota ..... George S. Michaelsen
Tank Painting and Racketeering in Minnesota ..... O. E. Brownell
Civilian Defense Status ..... Wm. H. Cary Jr.
The U.S. Public Health Service ..... O. C. Hopkins
The Federal Works Agency ..... C. W. Anderson
Address ..... Abel Wolman

New York Section—Spring Meeting—Scheduled Papers—March 25–26, 1943

Address of Welcome ..... *Mayor* Thomas E. Kennedy
The Present Status of the New York State Mutual Aid Program for Water Supplies ..... Earl Devendorf
Discussion ..... *Led by* A. T. Luce
The Mutual Aid Training Program in Zone 22 ..... E. P. Stewart and H. H. Wagenhals
The Administration of Priority Order U-1 as Applied to Inventories of Excess Water Works Materials ..... C. E. Kohlhepp
Co-operation of the Water Production Section With the Water Supplies of the United States to Aid in the War Effort ..... J. Walter Ackerman
The Protection of Water Supply Systems ..... F. J. Maier
Rapid Tests of Water Quality ..... F. Wellington Gilcreas
Practical Business Vision for the Postwar Period ..... Carlton K. Matson
Wartime Water Works Organization and Civilian Defense ..... John H. Brewster
The Major Role of Water Supply in Fire Protection ..... R. D. Kelly
The Co-operation Between Water and Fire Departments ..... Jas. J. Higgins
Blackouts and Dimouts ..... H. E. D'Andrade
Camouflage and the Water Works Problem ..... Francis Keally

Canadian Section—Scheduled Papers—April 7–9, 1943

Address of Welcome ..... *Mayor* William Morrison
Postwar Reconstruction in Water Works ..... W. C. Miller
Problems in Water Works Distribution Systems Under War Conditions ..... F. J. Veale

Guided Discussion—Maintenance of Deep Well Water Systems.....*Led by* E. V. Buchanan
Welding—Maintenance, Salvage, Conservation Tool.....H. Thomasson
Guided Discussions:
Sterilization of Water Works Distribution Systems.....*Led by* J. C. Keith
Water Works Administration Under Wartime Conditions.....*Led by* William Storrie
Water Works Accounting Practice for Canadian Municipalities.....C. Eastwood
Round Table Discussion—Surplus Water Works Funds.....
Led by W. R. Strike and A. J. B. Gray
Operating Experiences in Canadian Water Purification Plants:
Toronto.....N. J. Howard
Belleville.....O. H. Scott
Lachine.....A. J. Deslauriers
Hamilton.....D. H. Matheson
Windsor.....G. H. Strickland
Calgary.....W. E. Robinson
Guided Discussion—Control of Excessive Water Consumption in Wartime.....
Led by R. L. Dobbin

Illinois Section—Scheduled Papers—April 8–9, 1943

New Developments in Ground Water Exploration.....Carl A. Bays
The Need for Water Conservation in Illinois.....A. M. Buswell and Max Suter
Report of Committee on Control of Water Well Drilling.....Herbert L. White
Improving the Aurora Water Works.....Carl Duy
Round Table Discussion—Wartime Water Works Problems:
General Problems of Supply, Operation and Design.....Louis R. Howson
Buildings and Grounds.....J. C. Mooman
Distribution System.....S. T. Anderson
Mechanical and Electrical Equipment.....Charles M. Roos
Chemical Problems.....H. L. Dahm
War Damage Repairs.....L. P. Lessard
The Manpower Situation in the Water Works Field.....Paul Hansen
Discussion.....C. W. Klassen
Water Works and the WPB.....H. Lloyd Nelson

Ohio Section—Scheduled Papers—April 12, 1943

General Improvements to Mansfield's Water Works.....O. C. Kalbfleisch
Plant Expansion Problems of Shelby.....J. P. Adkins
Water Works Experience at Montpelier.....Ira M. Hoover
Round Table Discussion—Problems of the Small Water Utility
Address of Welcome.....*Mayor* Wm. J. Locke
Response.....W. W. Morehouse
A.W.W.A. and Wartime Problems.....Harry E. Jordan
Operation of the Water Utility in Conjunction With the Office of War Utilities Preference Order U-1.....H. Lloyd Nelson

Michigan Section—Scheduled Papers—April 20–22, 1943

Purpose and Scope of the School.....John M. Hepler
The Civilian Defense Program.....Wm. H. Cary Jr.
Water Supply in Wartime.....Robert L. McNamee
The Mutual Aid Program in Michigan.....Raymond J. Faust
Sabotage of the Water Service by Mechanical Injury.....Naseeb G. Damoose
Sabotage of the Water Service by Chemical or Bacterial Contamination..William M. Wallace
Effects of High Explosive and Incendiary Bombs.....Glenn C. Richards
Effects of Gas Bombing.....Leigh C. Anderson
Wartime Modification of Water Department Organization.....Alfred Eckert

Necessity for the Civilian Defense Program ..... Donald S. Leonard
Hydraulics of the Distribution System ..... Russell A. Dodge
Auxiliary Water Supplies for Use in Emergencies ..... Earl L. Holloway
Technical and Special Training of Regular Water Works Personnel ..... Hal F. Smith
Legal Aspects of Volunteer Services ..... George R. Sidwell
Panel Discussion—Maintaining Water Supply Service in Wartime:
Usual Methods of Repairing Broken Mains and Special Devices for Emergency Use ..... Maurice N. Gerardy
Disinfection of Water Mains Following Emergency Repairs ..... Rene J. LaMarre
Emergency Power Problems ..... J. Bryan Sims
Obtaining Materials by Priority ..... C. T. Van Dusen
Wartime Problems ..... William C. Hoad
Good Teaching Methods for Use in Emergency Training ..... Thomas Diamond
On Speaking in Public ..... Robert D. Brackett
Co-operation With the Fire Department ..... Arnold C. Renner
Co-operation With Other Utilities and Industries ..... Henry L. Lohr
The Relationship of the Water Utility to the Control Center ..... W. C. Patterson
Source and Use of Water Utility Auxiliaries ..... Harrison H. Caswell
The Organization and Training of Auxiliary Units for Emergency Water Service ..... Wm. H. Cary Jr.
The Job Back Home ..... John M. Hepler

Indiana Section—Scheduled Papers—April 29–30, 1943

Employee-Employer Relations ..... Cyrus E. Wood
Meter Reading Under Present Conditions ..... W. C. Shoemaker
Practical Applications of In-Service Training ..... C. H. Lawshe
New Drinking Water Standards ..... C. K. Calvert
Discussion ..... B. H. Jeup
Address ..... *Mayor* Robert H. Tyndall
Maintenance of Wells ..... N. E. Gunderson
The Indiana Water Table ..... Charles E. Bechert
The Latest in Chlorination Trends ..... A. E. Griffin
Laws Passed by the 1943 Legislature of Interest to the Water Works Profession ..... Joseph L. Quinn Jr.
Cement Lining of Pipe in Place ..... F. A. Schaefer
Construction of Distribution System Records ..... L. S. Finch
Conservation of Life and Property During Wartime ..... Richard Lieber
War Gases and Their Effect on Water Supplies ..... R. J. Kryter
Address ..... Harry E. Jordan

Pacific Northwest Section—Scheduled Papers—May 7–8, 1943

Address of Welcome ..... *Mayor* Arthur H. Howard
Response ..... W. J. Moore
Round Table Discussion ..... *Led by* Carl E. Green
Underwriters' Grading of Water Supply ..... T. P. Evans
Priorities, Surplus Stock and Materials ..... Samuel B. Morris
War Gases and Their Effect on Water Supply ..... G. E. Arnold
Emergency and Mutual Aid Water Works Defense (*Committee Report*) ..... Max S. Campbell
Mutual Aid ..... R. E. Dodson Jr. and Max S. Campbell
Bellingham Water System ..... John W. Cunningham
Report of Committee on Short School and Licensing of Operators ..... W. P. Hughes
Message From the American Water Works Association ..... Samuel B. Morris
Development of Water Supply for Wartime Needs ..... R. A. Duff
The Role of Water Supplies in the Transmission of Virus Diseases ..... Kenneth H. Spies
Tax Exemptions and Deductions—Revenue Act of Washington ..... D. B. Wallbom
Report of Committee on Safe Practices ..... Brian L. Shera

Round Table Discussions:
- Postwar Program ..... *Led by* Ben S. Morrow
- The Water Works Department's Place in the Victory Garden Program .. *Led by* W. P. Hughes
- Water Works Development (*Illustrated by map*) ..... *Led by* Carl E. Guenther
- Small Water Works Development ..... *Led by* Jack C. Strudgeon

Montana Section—Scheduled Papers—May 14–15, 1943

Address of Welcome ..... *Mayor* H. E. Biddinger
Response ..... J. M. Schmit
Address ..... F. F. Palmer
Address ..... W. F. Cogswell
Address ..... Samuel B. Morris
War Gases and Their Relation to Public Water Supplies ..... G. E. Arnold
New War Production Board Regulations for Utilities ..... Oscar Baarson
The Mutual Aid Program in Montana ..... H. B. Foote
Round Table Discussion ..... *Led by* C. W. Eyer
Financing Sewage Treatment Plants ..... C. J. Williams
Postwar Planning ..... Roy Covert
Further Control Experiences at Richardton, N.D. ..... K. C. Lauster
Pasturella tularensis, Susceptability in Aqueous Suspension to Chlorination .....
H. B. Foote, Wm. L. Jellison, Edward A. Steinhaus and Glen M. Kohls

Rocky Mountain Section—Scheduled Papers—September 15–17, 1943

Operating Experiences at Army Sewage Treatment Plants .....
John T. Franks and Chester A. Obma
Discussion ..... L. C. Osborn
Operating Experiences at the Montrose, Colorado, Sewage Treatment Plant .... Frank C. Hill
Grease Collection and Salvage ..... C. P. Gunson
Sewage Treatment ..... *A Motion Picture*
Round Table Discussions:
- Sewage Plant Maintenance and Repairs
- Priorities
- Miscellaneous Problems

Address of Welcome ..... *Gov.* John H. Vivian
Response and Chairman's Address ..... H. G. Watson
Behind the Water Tap ..... *A Motion Picture*
Watershed Management and Conservation ..... Chas. Connaughton
Failure of Water Lines Due to High Velocity ..... J. E. Warnock
Meteorology and Snow Surveys ..... Maxwell Parshall
Health and the Cycle of Water ..... *A Motion Picture*
Water Requirements for Cantonments ..... B. V. Howe
Discussion ..... C. T. Wright Sr.
Legal Liability of Municipal Water Works ..... Glen Saunders
Water Works Accounting ..... Wm. Loach
Discussion ..... K. E. Darling
Romance of Water ..... *A Motion Picture*
Round Table Discussions:
- Use of Calgon
- Comparison of Cost Between Zoline and Lime Soda Ash Softening ... *Led by* Dana E. Kepner
- Substitute Materials
- New Methods in Water Purification
- Sabotage, Mutual Aid and Gas Protection ..... *Led by* Wm. H. Cary Jr.

Western Pennsylvania Section—Scheduled Papers—September 23, 1943

Address of Welcome.....*Mayor* Cornelius D. Scully
Presentation of Plans of the Joint Committee on Water and Sewage Works Developments.....E. L. Filby
Acid Mine Drainage Studies of the Ohio River Pollution Survey.....M. LeBosquet Jr.
Discussions.....Charles A. Finley and Chas. H. Young
Current Activities and Policies of the A.W.W.A.....Samuel B. Morris
Round Table Discussion—Conservation Program and Methods of Controlling Waste of Water *Led by* E. E. Banksan
Presentation of General Plan.....H. Lloyd Nelson
Discussions.....Chas. L. Fox, Jas. H. Kennon and Jas. G. Griffiths
Symposium—Wartime Operation of Water Works.....*Led by* D. C. Morrow
Discussions.....John M. Rice, L. S. Morgan, M. J. Barrick, Wm. Insull, R. B. Adams and E. C. Goehring
Water Works Jobs for War and the Future.....John H. Murdoch Jr.

New York Section—Fall Meeting—Scheduled Papers—September 30–October 1, 1943

Address of Welcome.....*Mayor* Fancher M. Hopkins
Recent Improvements in the Binghamton Water Supply.....Robert C. Wheeler
Discussion.....S. P. Carman
Maintenance and Repair of Water Utilities During the War Emergency.....Paul Valle
Conservation of Water Supplies.....H. Lloyd Nelson
Postwar Planning for Water Works.....E. L. Filby
Current Activities and Policies of the Association.....Samuel B. Morris
Latest Developments in the New York State Mutual Aid Program for Water Service.....Earl Devendorf
The Public Utility Goes to School.....E. J. Rowe
Discussion.....Thomas A. Cole
The Ortho-tolidine-Arsinite Test for "Active" Chlorine.....Francis J. Hallinan

Southwest Section—Scheduled Papers—October 11–13, 1943

Address of Welcome.....*Mayor* R. A. Hefner
Response.....L. A. Jackson
Remarks.....H. E. Bailey
War Production Board's Program of Conservation.....H. Lloyd Nelson
Hot Water Tank Corrosion:
From the Water Works Man's Standpoint.....L. C. Billings
From the Manufacturer's Standpoint.....R. W. Hanson
Round Table Discussion.....*Led by* Edward R. Stapley
New Developments in Split Treatment Water Softening.....J. D. Walker
Discussion.....O. M. Smith
How Wartime Emergencies Are Being Met by the Water Superintendent.....G. L. Fugate
Oklahoma City Bluff Creek Water Supply Project:
General Discussion.....H. E. Bailey
Special Engineering Features.....V. V. Long
Discussion.....Porter J. Preston
Special Design of Cast-Iron Pipe and Method of Manufacture.....Thomas F. Wolfe
Discussion.....S. W. Freese
Round Table Discussion—Wartime Water Works Information.....*Led by* W. F. McMurry
Priorities.....C. F. Aurand
Utilities Excess Material.....Elgin B. Robertson
Selective Service Regulations.....Clyde E. Murray
War Manpower Commission.....Dave Vandivier
Blueprint Now.....E. L. Filby

Water Supply and Public Health ..... A. H. Ulrich
Drinking Water Standards ..... J. K. Hoskins
Discussion ..... Walter A. Reiman, A. B. Jewell, John H. O'Neal and V. M. Ehlers
Water for Army Camps ..... L. H. Scott
Latest Developments and Automatic Controls for Water Purification Plants ..... Edward M. Jones

Four States Section—Scheduled Papers—October 14–16, 1943

Address of Welcome ..... Martin J. McLaughlin
Incodel, The Delaware River Basin—A Home Rule Program for the Development and Conservation of Its Resources ..... James H. Allen
Fluorine in Drinking Water ..... Harry A. Faber
Panel Discussion—We Prepare for Peace:
The A.W.W.A. Plan in Perspective ..... Abel Wolman
Philadelphia Prepares ..... George Whitwell
A Medium Size City Puts on Its Thinking Cap ..... C. J. Bruce
Industry Also Is Looking Ahead ..... H. S. Hutton
Water and Civilization ..... M'Kean Maffitt
Panel Discussion—Manpower for Our Water Supplies:
The Overall View ..... A. M. Boyd
The Publicly Owned Water Supply ..... Rennie I. Dodd
The Privately Owned Water Supply ..... C. J. Alfke
Women Operators ..... Robert J. Stewart
Scanning the Problem Nationally ..... L. B. F. Raycroft
Panel Discussion—The Revised U.S. Public Health Service Drinking Water Standards:
The New Standards ..... Arthur P. Miller
The Effect From and Operator's Viewpoint ..... K. C. Armstrong
The Reporting Agency or State Department of Health Phase ..... George L. Hall
As the Gentle Rain ..... *A Motion Picture*
Open Forum—Prioritus ..... *Conducted by* H. Lloyd Nelson
Panel Discussion—Stop Waste:
An Outline of the Program ..... H. Lloyd Nelson
Philadelphia's Experience in a Voluntary Program ..... Martin J. McLaughlin
Washington Suburban Sanitary District Persuades Consumers to Reduce Water Consumption ..... Harry R. Hall
Practical Means of Effecting Reduced Consumption by Large Industrial Users ..... Lewis B. Miller
Look After Your Pumps—The Real Power Users in a Water Supply System ..... Morris L. Hicks

Missouri Valley Section—Scheduled Papers—October 15–16, 1943

Address of Welcome ..... *Mayor* John MacVicar
The Need for Water Conservation ..... Dale L. Maffitt
The Use of Small Cast-Iron Pipe ..... S. W. Harris
Army Post Water Plant Operation in the Seventh Service Command ..... Chester A. Obma
Blueprint Now ..... E. L. Filby
Postwar Planning for Water Works ..... John W. Pray, William T. Bailey, H. F. Blomquist and H. V. Pedersen
The A.W.W.A. in Wartime ..... Samuel F. Newkirk
Panel Discussion—Water Department Regulations ..... *Led by* M. P. Hatcher
Round Table Discussion—Wartime Water Works Problems

Wisconsin Section—Scheduled Papers—October 19–21, 1943

The Ominous Case ..... *A Motion Picture*
Address of Welcome ..... *Mayor* John L. Bohn
Factors Entering Into the Determination of Water Rates ..... J. P. Schwada and Edward Tanghe

Importance of the Distribution System.....Louis R. Howson
Conditioning Water for Steam Production.....F. H. Long
The New Drinking Water Standards.....M. Starr Nichols
Crenothrix and Red Water in Ground Water Supplies.....John R. Baylis
Transmission of Virus Diseases by Water.....E. R. Krumbiegel
Round Table Discussions:
The "Stop Waste" Program for Water Utilities.....*Led by* H. Lloyd Nelson
Suggestions for Co-operation in Wartime Operation.....*Led by* William H. Carey
War Gas Contamination of Water Supplies.....*Led by* C. C. Ruchhoft
The Relationship of the Regional Utilities Control Office to the Water Utilities.....
Led by Arthur I. Wallace and W. Fred Stevens
An Electro-Magnetic Device for Locating Underground Water Works Facilities.....
Led by Basil Miller
General Discussion of Matters Affecting Wartime Water Works Operation
Electronics at Work.....*A Motion Picture*
Postwar Planning for Public Works.....Henry Traxler
Engineering and Water Works Practice.....Paul Hansen
The Water Supply System of the Badger Ordnance Plant.....Wayne Bryan
Preparing of Plans for Postwar Development.....E. L. Filby

California Section—Scheduled Papers—Oct. 27–30, 1943

Stop Waste—Broad Conservation Program.....H. Lloyd Nelson
Activities of the Committee on Water and Sewage Works Development.....E. L. Filby
Address of Welcome.....*Mayor* Fletcher Bowron
The California War Powers Act and Its Relation to Water Utilities.....Willard Keith
California State Employees' Retirement Act and Its Effect Upon Municipal Water Utility Employees.....Carl K. Chapin
The Significance of Good Employee-Employer Relationships.....Edward B. Mayer
The Special Importance of Water Supply on the Pacific Coast to the Nation's War Effort....
Arthur E. Gorman
Symposium—Reconditioning Cast-Iron and Steel Pipe:
Experiences in Cleaning and Cement Lining Cast-Iron Pipe in Place.....Fred A. Rhodes
Discussions.....C. W. Heinecke, L. L. Farrell and W. R. McLean
Reconditioning and Protection of Steel Pipe Lines in Place.....Lauren W. Grayson
Removal, Reconditioning and Installation of 36" Steel Pipe by the Metropolitan Water District of Southern California.....Robert B. Diemer
Field Removal of Asphalt Lining and Coating From 24" Steel Pipe...Carleton V. Bascom
Specification Requirements for Reconditioning and Strengthening Used 44" Steel Pipe for Permanent Installation.....Fred D. Pyle
History and Purpose of Program for Certification of Treatment Plant Operators..K. W. Brown
Effect of Storage Reservoir Detritus on Ground Water.....T. V. Ackerman
Use of Calgon in Taste and Odor Control.....W. G. Curry
Results of Heavy Intermittent Chlorination.....John R. Rossum
"Information Please".....*Led by* L. J. Alexander
Program and Policies of the A.W.W.A.....Samuel B. Morris
Construction of the Pan American Military Highway (*Illustrated with slides*).....
Harold E. Spickard
Construction of the "Big Inch Pipe Line".....*A Motion Picture*
Bimonthly and Quarterly Meter Readings.....Murray R. MacKall
Effect of Approach Piping on Accuracy of Water Meters..L. F. Moullet and H. A. Knudsen
Reconditioning of Warped Meter Discs.....George C. Sopp
Fundamentals of Utility Extension Rules.....E. F. McNaughton
Victory Gardens, Rates and Problems.....C. P. Harnish
Open Forum.....*Led by* George W. Pracy
Use of Lead Alloy Service Tubing
Financing of Temporary Government and War Industry Water Service Installations
Is Guarding of Water Works Properties Necessary at This Time?

How Long Should Water Meters Remain in Service Before Overhauling?
Capture of Copper Service Tubing by Copper Recovery Corporation
Problems of WPB's Order U-1, Including Individual Experiences of Selling Excess Materia
Manpower Problems—Utilization of Women in the Water Works Industry
How Can Water Be Conserved?
Emergency Chlorination Program in Los Angeles County ..... Claude W. Sopp
Bacterial Deterioration of Rubber ..... Claude E. ZoBell
The Inapplicability of Bacterial Procedures for Southwest Waters ..... R. F. Goudey
The Physiological Importance of Dissolved Salts in Water ..... Denis L. Fox
Discussion ..... Alexander Goetz

North Carolina Section—Scheduled Papers—November 2–3, 1943

Maintenance of Machinery Under Today's Conditions ..... J. D. McConnell
Ground Water in the Halifax (N.C.) Area ..... J. L. Stucker
Discussion ..... E. D. Burchard
Address of Welcome ..... *Mayor* Geo. W. Coan Jr.
Battling the Tank Repair Racket ..... J. Grant Fry
As the Gentle Rain ..... *A Motion Pictur*
An Englishman Goes Home ..... Charles Henry Campbell
Sewage Treatment at Rocky Mount ..... D. York Brannock
The City of Hickory's Rose Garden ..... P. L. Abernethy
Modifications of the Relative Stability Test ..... Samuel H. Hopper
Address ..... Samuel F. Newkirk
Stop Waste—Broad Conservation Program and Priorities Regulations Affecting Water Works ..... H. Lloyd Nelson
Presentation of Plans of the Joint Committee on Water and Sewage Works Postwar Developments ..... Samuel F. Newkirk

West Virginia Section—Scheduled Papers—November 4–5, 1943

Address of Welcome ..... Roy F. Au
Response ..... H. W. Speidel
Billing and Collecting for Water Service ..... M. H. Martin
Public Health Service Drinking Water Standards ..... Frank R. Shaw
Water Conservation Plans for West Fork River Basis ..... Scotland G. Highlan
Water Production—An Essential War Industry ..... Frank Woodbury Jone
Water and Sewage Works Planning ..... Harry E. Jordan
Water Conservation ..... D. E. Davi
A Medium Size City Puts on Its Thinking Cap ..... Charles J. Bruc
Mapping the Water Distribution System ..... J. B. Dougla
The Ominous Arms Case ..... *A Motion Pictur*
Twenty Years of Trouble Shooting ..... Martin E. Flenti
Coagulation of Water ..... Perkins Boynton and Henry R. Gay Jr.
Tests for Residual Chlorine ..... Gilbert L. Kels
Chlorinator Clinic ..... *Conducted by* E. P. Johnson

New Jersey Section—Scheduled Papers—November 4–7, 1943

The New U.S. Public Health Service Standards for Drinking Water ..... Paul Tamer and Peter Palli
Discussion ..... George D. Norcom and Lee T. Purce
Unusual Rainfall Records Established for the Storm of July 17–18, 1942, Near Ridgeway, Pa ..... James E. Stewar
The Broad Conservation Program of the War Production Board ..... H. Lloyd Nelso
The National Conservation Program Applied to Water Works Operation ..... Phillip B. Nile
Blueprint Now ..... Samuel F. Newkirk

Round Table Discussions.....*Led by* E. Vernon Smith
The Scott Bills
Experiences in the Training of Water Department Auxiliaries
What Portion of the Civilian Defense Activities and Wartime Water Works Practices Can Be Made of Permanent Peacetime Value?
Water Auxiliaries for Emergencies
Meter Reading Practices
Mutual Aid Organizations
Does the Team Know the Score?.....Miss E. McDonnell
Leakage Surveys.....Russell C. Smalley
Round Table Discussions:
Leakage and Waste Elimination Surveys
Experiences With Inter-Connections
The Problem of the Customer Owned Meters

Florida Section—Scheduled Papers—November 18–20, 1943

Addresses of Welcome.....*Mayor* J. N. Morris and August Burghard
Response.....J. R. Hoy
The WPB Conservation Program and Current Priority Regulations.....H. Lloyd Nelson
Problems in the Treatment of Water for the Nation's Capital.....Carl J. Lauter
Blueprint Now.....E. L. Filby
Discussion.....*Led by* J. B. Miller
Water Purification Methods Involving Silicates of Soda.....H. R. Hay
Discussion.....*Led by* A. P. Black
The Role of Water Supply Records in Wartime Operation and Postwar Planning.....G. E. Ferguson
Anthrafilt and Its Significance.....Homer G. Turner
The Development of Surface Wash in Modern Filter Washing.....F. E. Stuart
Chlorination in 1943.....A. E. Griffin
Design of Cast-Iron Pipe Based on American Standards Association Methods...Thos. F. Wolfe
Water Works in Wartime.....Samuel B. Morris
Water Works Design Under Wartime Conditions.....Wylie W. Gillespie
Discussion.....E. B. Barnett
Developments in Split Treatment for Water Softening.....Donald Walker
The Florida Water Works Operators Association..J. R. Hoy, F. A. Eidsness and W. T. Calaway

Virginia Section—Scheduled Papers—November 22–23, 1943

Address of Welcome.....*Mayor* Leo F. Henebry
Water Works in Wartime.....Samuel B. Morris
The Roanoke City Water Works.....Charles E. Moore
The New Filtration Plant and Other Improvements at Radford.....W. T. Wells
Design and Operation Features of the Two New Filtration Plants at Newport News.....Reeves Newsom
The War Production Board Conservation Program and Current Priority Regulations.....H. Lloyd Nelson
The Current Materials Situation:
Cast-Iron Pipe.....C. R. Spencer
Water Meters.....B. D. Hubley
Pumping Equipment.....J. C. Goldthorpe
Chlorine and Chlorination Equipment.....R. C. Clement
Small Water Works for Unincorporated Areas.....Garland Sydnor
Jurisdiction of the State Corporation Commission.....H. Lester Hooker
The New Water Filtration Plant and System Extensions at Portsmouth.....X. D. Murden
Blueprint Now.....E. L. Filby
Postwar Planning for Water Works.....Jas. A. Anderson
Federal Aid in Meeting Community Needs.....Kenneth Markwell

Current Water Works Literature in Review.....Linn H. Enslow
Questions and Discussions.....*Led by* R. C. Bardwell

The following Sections held meetings in affiliation with other associations and groups: Four States Section and Pennsylvania Water Works Operators Association; Indiana Section and Indiana State Board of Health; Michigan Section and Office of Civilian Defense, Michigan Conference on Water Purification, Michigan Department of Health and College of Engineering; New Jersey Section and South Jersey Water Superintendents; North Carolina and North Carolina Sewage Works Association; Western Pennsylvania and Western Division of Pennsylvania Water Works Operators Association; and Wisconsin Section and Engineering Society of Wisconsin.

Section Meetings—1939–1943

Section	*1939*	*1940*	*1941*	*1942*	*1943*	*Meeting Place—1943*
California	Oct. 25–28	Oct. 23–26	Oct. 22–24	Oct. 28–30	Oct. 27–30	Los Angeles, Calif.
Canadian	Apr. 12–14	Mar. 27–29	June 23	Apr. 15–17	Apr. 7–9	Hamilton, Ont.
Cuban	——	May 21	——	Feb. 17	Oct. 4	Havana, Cuba
	Oct. 26					
Florida	May 4–6	May 16–18	Nov. 13–15	Nov. 12–14	Nov. 18–20	Ft. Lauderdale, Fla.
Four States	Oct. 5–6	Nov. 7–8	Nov. 5–7	Oct. 7–9	Oct. 14–16	Philadelphia, Pa.
Illinois	Apr. 20–22	May 22–24	Apr. 28–30	June 22	Apr. 8–9	Springfield, Ill.
Indiana	Apr. 25–26	Apr. 4–5	Apr. 24–25	Apr. 9–10	Apr. 29–30	Indianapolis, Ind.
Kentucky-Tennessee	Apr. 10–12	Oct. 21–23	Oct. 27–29	Oct. 19–21	——	No scheduled meeting
Michigan	Sept. 20–22	Sept. 11–13	Sept. 24–26	——	Apr. 20–22	Ann Arbor, Mich.
Minnesota	Aug. 24–25	Nov. 7–9	Oct. 9–11	Sept. 24–26	Mar. 12–13	Minneapolis, Minn.
Missouri Valley	Oct. 11–13	Nov. 13–15	Oct. 20–22	Oct. 22–24	Oct. 15–16	Des Moines, Iowa
Montana	Apr. 14–15	Apr. 5–6	May 23–24	Apr. 17–18	May 14–15	Billings, Mont.
New England	——	——	——	——	——	No scheduled meetings
New Jersey	Feb. 7	Feb. 7	Feb. 19	Mar. 26	Nov. 4–6	Atlantic City, N.J.
	Oct. 20–21	May 22	May 22	Oct. 7–9	Mar. 14	Paterson, N.J.
		Oct. 18–19	Oct. 16–18		Apr. 9	Freehold, N.J.
New York	Mar. 30–31	June 6–7	Mar. 27–28	Apr. 30–May 1	Mar. 25–26	Syracuse, N.Y.
	Nov. 2–3	Sept. 25	Sept. 11–12	Oct. 15–16	Sept. 30–Oct. 1	Binghamton, N.Y.
		Dec. 27	Dec. 30	Dec. 30		
North Carolina	Nov. 6–8	Oct. 28–30	Nov. 3–5	Nov. 3–4	Nov. 2–3	Winston-Salem, N.C.
Ohio	Apr. 27–28	May 9–10	May 15–16	May 14–15	Apr. 12	Mansfield, Ohio
Pacific Northwest	May 11–13	May 8–10	May 8–10	May 8–9	May 7–8	Bellingham, Wash.
Rocky Mountain	Sept. 18–19	Sept. 16–18	Sept. 17–19	Sept. 17–18	Sept. 15–17	Denver, Colo.
Southeastern	Apr. 17–19	Mar. 18–20	May 12–14	Apr. 20	——	No scheduled meeting
Southwest	Oct. 16–19	Oct. 14–17	Oct. 13–16	Oct. 12–14	Oct. 11–13	Oklahoma City, Okla.
Virginia	Sept. 7–8	Sept. 5–6	Oct. 30–31	Nov. 5–6	Nov. 22–23	Roanoke, Va.
West Virginia	Sept. 28–30	Oct. 24–26	Oct. 30–Nov. 1	Nov. 12–13	Nov. 4–5	Clarksburg, W.Va.
Western Pennsylvania	Sept. 18–20	Sept. 18–20	Aug. 7–9	Sept. 18	Sept. 23	Pittsburgh, Pa.
Wisconsin	Oct. 30–Nov. 1	Oct. 14–16	Oct. 6–8	Oct. 20–21	Oct. 19–21	Milwaukee, Wis.

Section Membership at Time of, and Total Attendance at, Section Meetings—1939–43

SECTION	1939		1940		1941		1942		1943	
	Membership	Attendance	Membership	Attendance	Membership	Attendance	Membership	Attendance	Membership	Attendance
California	470	1,035	501	1,082	552	688	566	571	589	915
Canadian	222	445	219	367	262	*	266	410	289	447
Cuban	†	—	27	‡	35	‡	41	17	36	§
Florida	63	110	76	134	78	110	94	108	111	105
Four States	191	150	186	177	210	177	229	345¶	278	359
Illinois	194	§	199	226	197	152	284	*	282	142
Indiana	125	230	125	200	142	223	142	190	175	200
Kentucky-Tenn.	74	108	89	93	105	91	111	73	117	‡
Michigan	99	218	116	233	124	245	122	‡	126	215
Minnesota	69	115	77	169	86	144	90	180	90	178
Missouri Valley	175	*	197	150	199	153	199	96	201	124
Montana	36	118	41	75	42	66	42	71	46	71
New England	131	‡	137	‡	139	‡	144	‡	146	‡
New Jersey**	205	136	218	172	221	134	211	184	261	135
New York||	438	190	440	206	472	171	486	200	509	194
North Carolina	90	244	108	226	113	243	138	192	160	202
Ohio	139	136	163	198	173	118	182	146	205	122
Pac. Northwest	121	224	141	260	165	262	176	201	205	184
Rocky Mountain	79	131	87	123	88	84	83	86	84	122
Southeastern	143	222	157	222	166	192	196	130	198	‡
Southwest	121	422	202	297	167	391	163	329	266	390
Virginia	53	94	53	103	68	153	77	117	97	166
West Virginia	54	145	63	168	65	125	69	113	65	130
Western Pa.	106	73	120	142	132	135	128	152	142	160
Wisconsin	73	258	76	238	89	237	106	215	117	228

* Regular meeting canceled. Business meeting held at annual convention.
† Section not organized.
‡ No regular meeting scheduled. Membership given as of date of annual convention.
§ No record of attendance.
|| Three regular meetings held. Only Fall meeting recorded here.
¶ Joint meeting with New Jersey Section.
** Spring meeting recorded here. Fall meeting held jointly with Four States Section.

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NEWS OF THE FIELD

How high up the scale of civilization an individual has climbed is measured by his consideration for other people. How well suited a man is to play his part in democratic society is gaged by how clearly he recognizes his responsibilities rather than by how loudly he asserts his rights. It is easy for us to measure peoples and nations by the same yardsticks—but that is a relatively unprofitable transference of our personal problems to the people as a whole.

This country is actually engaged in several conflicts at one time. The international conflict World War II (or World War I, part 2) is one of them. Those internal creakings called social conflicts are another. Just as serious in its own fashion and just as dangerous is that conflict within the hundred million or so of us in America who are old enough to assert our individuality and who tend to assert it in terms of our rights and forget our responsibilities. A sort of case history check list will indicate our meaning:

The automobile driver who plasters a B card on his windshield and tears down the road at fifty miles an hour. The housewife who abuses the grocer because she cannot get as much meat or butter or coffee as she demands. Those who drove a forthright price administrator out of office and who will squawk when prices go up. The contractor who applies his priority rating received for an approved project to another which he has been told he cannot build. The water works man who expects preferred treatment for the industry but who either by neglect or by intent furnishes no information concerning his part of the industry when someone asks him a question or two.

Yes—you said it. Now we are down to cases. By and large, the field of public water supply is getting a square and fair deal from those in authority in these wartime days. But aiding in laying the groundwork upon which that square deal is laid, one finds far fewer men than should be helping.

1943 is ahead of us. We are going to have some new problems to meet and some new facts that must be developed. How well the men of executive responsibility in water supply are fitted for their place in this representative democracy of ours will be evidenced by how well they conform to the rules of the civilian war game; by their willingness to furnish information when it is reasonably requested; by their recognition that whatever rights they have as representatives of the industry depend upon how clearly they recognize their responsibilities.—*Harry E. Jordan.*

(*Continued on page 2*)

(*Continued from page 1*)

Transportation Tax: Municipalities are not exempt from paying the new 3 per cent property transportation tax imposed under the 1942 revenue act effective December 1; however, the OPA has ruled that this tax must be considered as a freight rate increase which cannot be passed on, rather than as a tax which can. Where the pricing is on a "delivered price" basis the seller will absorb the tax. In cases where the price is "f.o.b. producer's establishment," the buyer absorbs the cost. This ruling will apply to all maximum price regulations, with certain exceptions such as iron and steel scrap and coal. Cities are not exempt from the 4 cents a ton tax on the transportation of coal and the OPA is expected to issue a ruling on how this tax is to be treated in arriving at maximum prices.—from *Public Management* for December 1942.

"Protection and Maintenance of Public Water Supplies Under War Conditions" is an Office of Civilian Defense document now available to water works men through their State Water Co-ordinators. This is a very important document developed by the Medical Division of the OCD and is known as Sanitary Engineering Bulletin No. 1.

Water department employees are warned against participation in other than water supply activities of civilian defense by an Operations Letter issued by OCD Director James Landis:

"It has come to the attention of the Volunteer Offices Section that in many communities employees of utility companies and essential municipal services have been freely assigned as Air Raid Wardens, Auxiliary Police, Auxiliary Firemen and elsewhere in the Defense Corps. This is a most

(*Continued on page 4*)

Franklin Henshaw, Manager of the Scarsdale, N.Y., Village Water Department until his retirement in 1939, died at the age of 75 on December 7 at his home in Scarsdale. Mr. Henshaw had long been extremely interested in Association affairs and several years ago he funded what is known as the Henshaw Cup awarded each year to the A.W.W.A. Section having the greatest proportion of its members present at its annual meeting.

Mr. Henshaw was born in Boston and attended the Massachusetts Institute of Technology. He traveled throughout America building industrial plants before coming to Scarsdale. Mr. Henshaw was the first man to fill many of the offices in Scarsdale, having become the Village's first treasurer in 1915, the first fire chief in 1915, the first street commissioner in 1916, and the first plumbing inspector in 1916. He resigned from all these positions in 1921 to become Scarsdale's first superintendent of the water department.

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(*Continued from page 2*)

unwise procedure. Such employees must be available for emergency repairs or other essential operations during the period of enemy action. Under no circumstances should they be committed to other forms of volunteer service during or following enemy attack. If there are at present employees of utility companies or essential municipal services assigned to units of the Defense Corps other than the Utility Repair Unit, they should be replaced by other volunteers at the earliest possible moment."

Publicly owned utilities are required to deduct 5 per cent of each employee's salary or wages above $624 per year beginning with January 1, 1943, according to the December 10, 1942, issue of *Public Power*. This is a withholding levy which the utility must carefully report and pay into the U.S. Treasury at the end of each quarter of the calendar year.

Census data on water treatment plants by states are now available in pamphlet form for limited distribution by the Division of Public Health Methods, Stream Pollution Investigations, East Third and Kilgour Sts., Cincinnati, Ohio. Distribution will generally be restricted to libraries and similar organizations connected with the water works field. Complete sets of the pamphlets are on file for reference at each of the U.S.P.H.S. district offices located at: New York, Washington, Chicago, New Orleans, Kansas City, Denver, San Francisco and San Antonio. Sets are also being distributed to state sanitary engineers.

A summary of these data, prepared by S. R. Weibel, P.A. Sanitary Engineer (R), U.S.P.H.S., was published in the December 1942 JOURNAL.

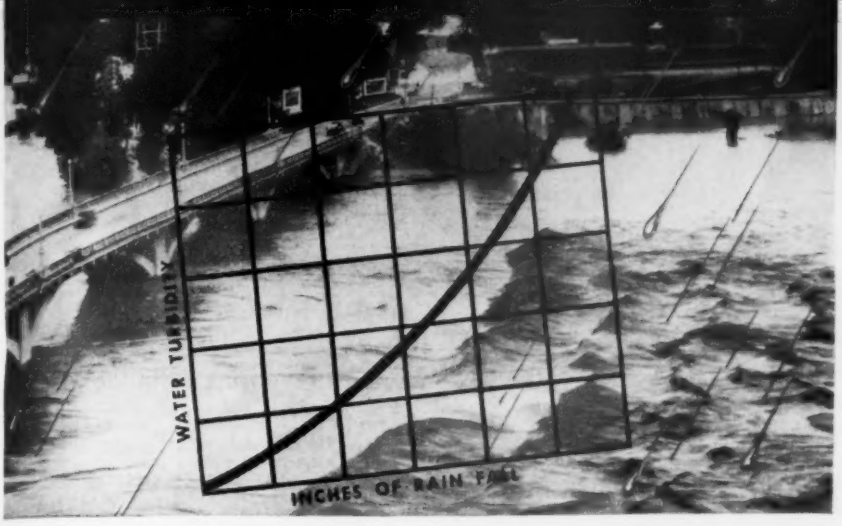
Trend of the times is seen in the recent acquisitions of more women as members of the Association. Two recent ones have been Miss Sara K. Philhower, Chemist for the City of Gastonia, N.C., and Miss Zelma Q. Walsh who does chemical and bacteriological examinations of water at Camp Butner, N.C.

(*Continued on page 6*)

Cortland Mosier, for 20 years Superintendent of the Spring Valley, N.Y., Water Co., died on December 4, at his home.

Mr. Mosier was born in Kingston, N.Y., and came to Spring Valley about forty years ago from Westwood where his father had been superintendent of the water company. Mr. Mosier became superintendent of the Westwood Water Company, then came to the same position at Spring Valley when the Hackensack Water Company transferred the elder Mosier to New Durham. Mr. Mosier was active in the local fire department and in amateur dramatic groups. He had been an Active Member of the A.W.W.A. since 1929.

HEAVY RAINFALL AFFECT YOUR WATER SYSTEM?



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Rain! Rain! Rain! Nearly every section of the country has reported unusual rainfall and storms this past season, and many municipalities have had to cope with serious floods.

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Miss Walsh, who was graduated from the Richmond Professional Institute of the College of William and Mary with a bachelor of science degree in general science, previously worked in the laboratory of the Fourth Service Command, Fort McPherson, Ga.

Miss Philhower, who was graduated in 1941 from Furman University, Greenville, S.C., with the equivalent of a bachelor of science in chemistry, has also done work in chemistry at Wake Forest College, before going to Gastonia where she makes the routine tests at the filter plant and regulates the chemical feeding machines as well as making analyses for the local sewage disposal plant.

J. Walter Ackerman, who retired in 1940 from the position of Chief Engineer and General Superintendent of the Consolidated Water Co. at Utica, N.Y., is now serving as Analyst, Water Section, Power Division, War Production Board, Washington, D.C.

Walter S. L. Cleverdon advises that he is retiring from the position of Supervisor of Property & Assoc. Prof. of San Eng., New York University, in accordance with the established custom of retirement there at the age of 65. Prof. Cleverdon, who has been an Active Member of the A.W.W.A. since 1916, will make his home at 33 Deshon Ave., Bronxville, N.Y.

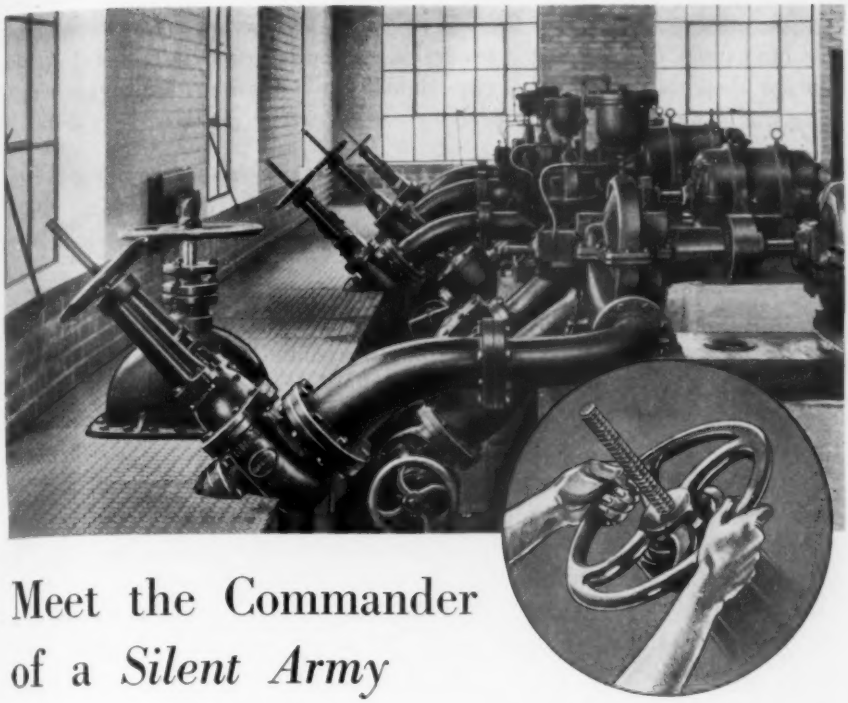
Howard D. Schmidt, Sanitary Engineer of Tennessee's State Health Dept., has left that position to take up duties for the U.S. Government with service in South America. R. P. Farrell, Assistant Director of the Department's Division of Sanitary Engineering, will succeed Mr. Schmidt. Mr. Schmidt has for several years very ably served the Kentucky-Tennessee Section as its Secretary-Treasurer. He has also been an A.W.W.A. Director from that Section.

A ring of sewage treatment plants about Milwaukee has been urged recently by Herbert Moore, Milwaukee Engineer, in connection with recent discussions regarding provision for necessary sewage disposal for Milwaukee's environs. Mr. Moore suggests that, inasmuch as Milwaukee

(*Continued on page 8*)

Edward P. Hyland, Superintendent of the Moorestown, N.J., Water and Sewer Departments died on December 21.

Mr. Hyland had been active in the affairs of the New Jersey Section of the A.W.W.A., having served as Chairman of the Section in 1940–41.



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LUDLOW VALVES

SINCE 1866

(*Continued from page 6*)

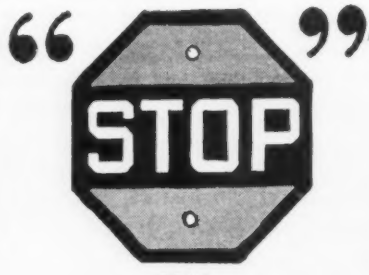
has built miles of interceptor sewers in the outlay of $100,000,000 on its sewage disposal system, the city should now consider numerous small plants as a more economical procedure for further expansion.

W. L. Avrett Jr. is now on active service with the Sanitary Corps, serving as First Lieutenant and stationed at Camp Pickett, Va. Until recently he was Asst. Engr. in the Georgia Dept. of Health and had been in the Reserve Corps, Coast Artillery.

Louis A. Geupel has resigned from the position of Superintendent of the Evansville, Ind., Water Dept., to assume the duties of Sanitary Engineer at Camp Breckenridge, Morganfield, Ky. Mr. Geupel had been Superintendent at Evansville for the past five years and for two years previously had served as Evansville's City Civil Engineer.

Mr. Geupel's career since being graduated with the degree of B.S. in Civil Engineering from Purdue University in 1910 has been varied. After a brief service on underground construction in Evansville, he was employed by Alvord, Burdick and Howson, Chicago Engineers, for three years; then he divided three years in service for the York, Pa., Water Co., the International Filter Co., and the Indiana State Public Service Com.

(*Continued on page 10*)



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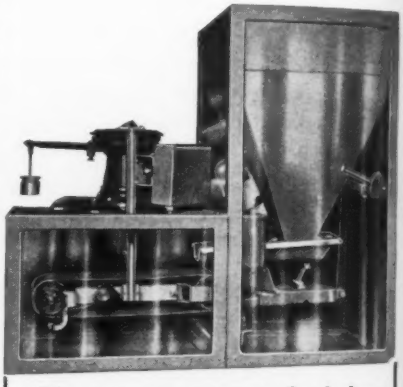

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(*Continued from page 8*)

When war conditions forced the dissolution of the six month's old White-Geupel Co., Contractors, Mr. Geupel spent eight months as Sanitary Engineer in charge of Evansville's 12-mgd. filter plant before taking up war work for the DuPont Engineering Co. and the U.S. Ordnance Dept. In 1920 he returned to Alvord, Burdick and Howson, then in 1921–25 he was Director of the Water and Sewage Dept. of the Indiana State Board of Health. He spent the next seven years in the employ of Ulen and Co. of New York as Chief Engineer on construction of numerous water and sewage disposal systems in Poland and also supervised construction in Cuba, Greece and Persia. Before returning to Evansville in 1935, he spent two years as Chief Engineer for the Bureau of Engineering of Indiana's State Board of Health.

H. E. Wolbert, Superintendent, Board of Water Supply, Mount Vernon, N.Y., says that, having reached and passed the age limit set by the New York State Retirement System, he is now retiring after 33 years of service at Mount Vernon. His first 13 years were service as Superintendent for the New York Inter-Urban Water Co., the former owner of the plant. Since the City of Mount Vernon purchased the plant in 1922, Mr. Wolbert has in the position of Superintendent been the leader in rebuilding the plant and bringing it up to date. He has been an Active Member of the A.W.W.A. since 1916.

D. S. Abell, formerly Chief Engineer and Director, Bureau of Sanitation, Health Dept., Montgomery, Ala., is now on active duty as Captain in the Sanitary Corps, stationed at Camp White, Ore.

Carl E. J. Haiss, formerly Sanitary Engineer for the Water Power and Control Commission, New York, is now in service as First Lieutenant, Sanitary Corps, Station Hospital, Mitchel Field, L.I.

Merrill L. Riehl has resigned from the position of Civil Engineer of the Columbus, Ohio, Division of Water and is now Associate Sanitary Engineer, U.S. Army Engineer Corps. He will operate from headquarters at Columbus a completely equipped trailer laboratory which will be subject to call to any of the army posts in the four states that comprise the area. This is a trailer laboratory which was made for the Coca Cola Co. and sold to the Army. Mr. Riehl has been on the laboratory staff at the Columbus Water Purification Plant for three years, but had been Instructor in Industrial and Sanitary Chemistry at Case School of Applied Science, Cleveland, before returning to Columbus as Civil Engineer in the Division of Water.

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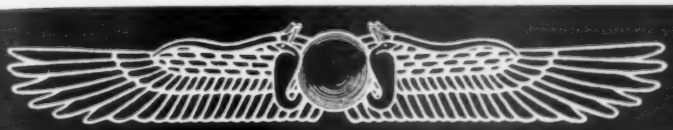

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Report of New York Section Meeting

The Fall Wartime Conference Meeting of the New York Section of the American Water Works Association was held at the DeWitt Clinton Hotel, Albany, N.Y., October 15 and 16, 1942.

The program was entirely devoted to war subjects. We were particularly fortunate in having with us Arthur E. Gorman, Chief, Water Production Section of WPB's Power Branch, Washington, D.C. Mr. Gorman outlined the preparation and operation of the new WPB ruling "P-46." (See page 1723 of the November JOURNAL.)

Mr. Gorman commended the New York Section for its efforts in co-operating on all types of information needed by the War Production Board in the preparation of their rulings as to priorities, selective service and war inventories.

Harry E. Jordan, Secretary of the parent association, presented the co-ordinated reports of the various WPB rulings affecting water works operators.

A novel part of the program was the "Information Please," conducted after the manner of the well-known radio program. This developed a very interesting and able discussion by members as well as the so-called "authorities."

A carefully prepared and very interestingly presented demonstration of a "Civilian Defense Control Center" was presented by the City of Albany officials. A script of the entire proceeding and a description of same has been forwarded to the Secretary's Office so that other Sections or organizations occupied in the war effort may use it in their programs, if they so desire. (This is planned for early JOURNAL publication.)

"The Control of Water Supply Quality During the War," an address by Charles R. Cox, Chief of the Bureau of Water Supply, Div. of Sanitation, State Dept. of Health, and a "Review of the Olean Flood in Relation to the Mutual Aid and Civilian Protection Plans" by Alan Drake, Director

(*Continued on page 14*)

NIAGARA IRON CASE WATER METERS

provide wartime copper conservation plus the time-proved Niagara design. They comply with victory-meter limitations. Works are interchangeable with American Bronze Case Meters.

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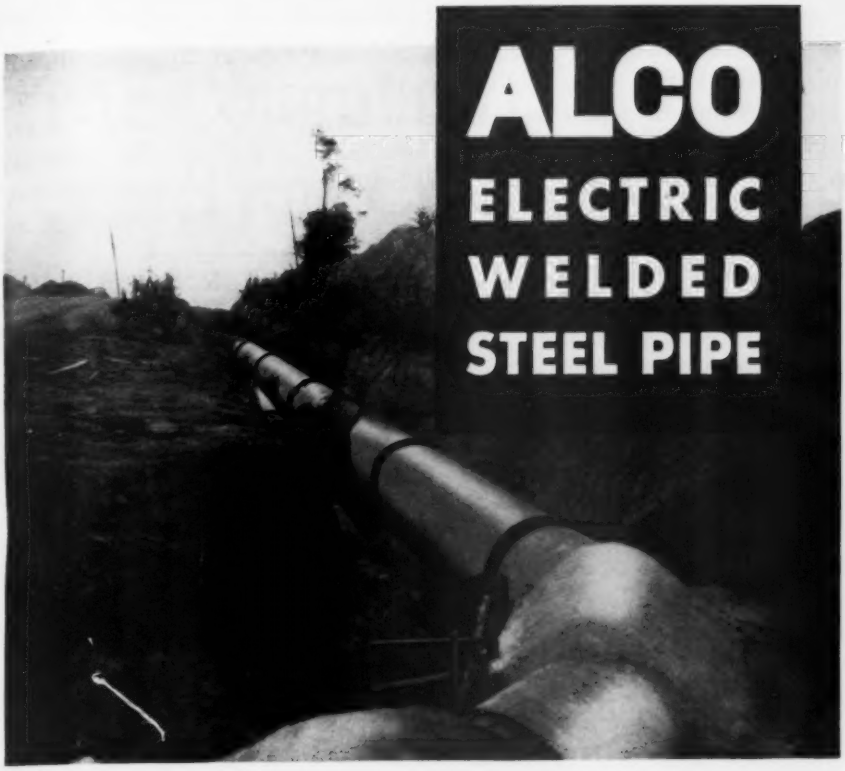
Established 1892 2914 Main St., Buffalo, N.Y.



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(*Continued from page 12*)

of Water, Buffalo, and Frank O'B. Nehin, Pitometer Engineer, Bureau of Water, Buffalo, were published in the December JOURNAL. The complete schedule of papers and authors is shown in the summary, "Papers Scheduled at Section Meetings," also published in the December JOURNAL.

Of particular interest was the almost one hundred per cent attendance of all registrants at all of the sessions, showing a vital interest in the wartime papers presented.

R. K. BLANCHARD,
Secretary-Treasurer

John A. Kienle, Vice-President and Director of Sales for the Mathieson Alkali Works, recently retired. Mr. Kienle joined the Mathieson Alkali Works as Manager of Sales in 1920 and was elected Vice-President and Director of Sales in 1922.

Esse E. Routh has been elected Vice-President and Director of Sales to succeed Mr. Kienle. Mr. Routh has spent his entire business career with the firm, having joined it in 1920. Robert J. Quinn has been made Assistant to the Vice-President and Director of Sales and D. W. Drummond has been appointed General Manager of Sales.

Jeff Corydon, President and Director of Proportioneers, Inc., resigned from those positions as of December 11, 1942. He will retain a business address at Proportioneers in Providence until March 11, 1943, and after a short vacation plans to take up active duties to be announced later. Mr. Corydon's successor has not yet been named.

James M. Hait, for many years Chief Engineer of the Peerless Pump Division of Food Machinery Corp., is now General Manager of a newly created division called the Division of Procurement and Engineering. Mr. Hait, who has been credited with many original designs in pumps, has been working on the development of amphibian tanks for the past year.

(*Continued on page 16*)

Peerless Pumps

America's largest selling pumps—for all services in all industries...

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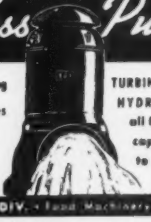

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(*Continued from page 14*)

Report of Wisconsin Section Meeting

The Twenty-First Annual Meeting of the Wisconsin Section of the A.W.W.A. was held on October 20 and 21, 1942, at the Hotel Wausau, Wausau, Wis. The attendance was 215, which, while not a record for the Wisconsin Section, was among the first three highest. The number of men actually attending the meetings was greater than at any previous convention. The program was especially arranged to provide the maximum amount of information for water utilities operating under war conditions.

The Honorable Herbert A. Giese, Mayor of Wausau, opened the general session, and the address of the Chairman and the report of the Secretary-Treasurer followed. Mayor Giese was very much surprised to find the meeting room filled promptly at 10 o'clock. In addition to welcoming the Section to Wausau, he congratulated the men on their getting down to business so promptly.

W. E. Simons of the Wisconsin Salvage Committee spoke on the National Salvage Program, and stated that it was extremely important to obtain steel scrap because 50 per cent of finished steel was made from scrap.

(*Continued on page 20*)

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There are more Layne Wells and Pumps serving cities throughout the world than any other kind made. Layne Wells and Pumps are known as the most efficient ever built. They last longer and in upkeep cost have an amazingly fine record. They seldom need repairs of any nature. Write for latest catalogs, bulletins, folders, etc. No obligation. LAYNE & BOWLER, INC., Memphis, Tenn.

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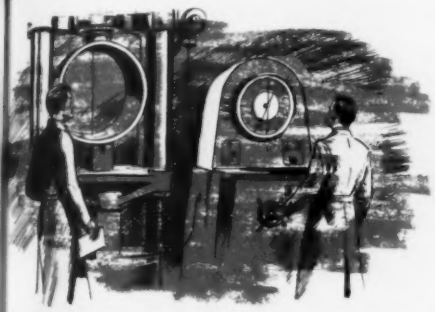
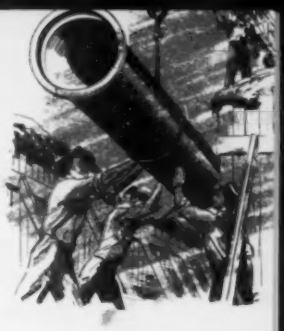


stings; presses for making ar- or plate, shells, and for de- drating gunpowder.

To thousands of our customers, hose requirements for needed tensions of water, gas and sewer ains we have been unable to pply, we have this to report: he clouds of war have a plati- m lining.

When you can get the cast iron pe you want, and need, it will better than two years ago—*tter than ever.* Our stepped-up rtime production alone would bound to reflect progress in sign and manufacture. The *ant research* of our members—*e field research* of our Associa- on—the intensified *laboratory ntrols*, from raw materials to hished product, made necessary greater production—are a con- nuing program.

For this *improved cast iron* pe which we are delivering day to our No. 1 Customer —which few of our regular customers have had an opportunity to lay—we began to prepare ten years before Pearl Harbor. Two years ago, our cooperative study with leading consulting engineers representing pipe users, under the auspices of the American Standards Association, came to fruition in the adoption of the *A. S. A. Law of Design* for cast iron pipe in underground service.



We are now making cast iron pipe according to this new *Law of Design*—the most modern of all pressure pipe for water, gas and sewer mains—with all the inherent virtues of the cast iron pipe you have previously laid. This is pipe worth waiting for if your requirements for *permanent installations* can possibly be deferred. We repeat—pipe worth waiting for. Cast Iron Pipe Research Association, Thomas F. Wolfe, Engineer, Peoples Gas Building, Chicago.

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(*Continued from page 16*)

Alvin J. Kuecker, Supt. of the Distribution System at Elgin, Ill., delivered a paper on "Valve Inspection and Maintenance." (His paper was published in the December JOURNAL.)

Arthur Gorman, Chief of the Water Production Section of the WPB, discussed water as a critical war material. He stated that in many locations, industrial plants had been built for war production and Army camps had been located without reference to the availability of an adequate water supply.

The Purification Session was held Tuesday afternoon, October 20, with James E. Kerslake of Milwaukee presiding. L. L. Hedgepeth of the Pennsylvania Salt Mfg. Co. discussed emergency chlorination. He stated that lime can be used as a disinfectant in case of an emergency, although it is not completely effective. He discussed the various types of hypochlorites, calling attention to the fact that Grade A, with 70 per cent available chlorine, and Grade C, with 30 per cent available chlorine, might be used for emergency chlorination, but recommended that liquid chlorine be used in all cases for station use. He stated that it would be possible to build emergency chlorinators which would function more or less satisfactorily and gave some suggestions with reference to this.

(*Continued on page 22*)

Vogt Fire Hydrants

Standard—
"Traffic Model"—
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Vogt Gate Valves

Non-Rising Stem—Outside Screw and Yoke—Hub End—Flanged End—Ends to Fit any Type Pipe.

Also—Floor Stands, Shear Gates—Tapping Sleeves and Valves, Flap Valves and Mud Valves.

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OUR COUNTRY'S war needs require all the copper and the copper-zinc alloy, brass, that would otherwise go into such familiar peacetime uses as service lines, rustproof plumbing, or automobile radiators.

Today, a major part of available copper and zinc is needed for ammunition—cartridge cases, rotating bands on shells, time fuses, etc.

Tremendous quantities of copper go into wire and cable for vital electrical conductors in the war industries—in tanks, and bombers, and battleships . . . still more copper is needed for a variety of other uses . . . in naval and merchant ships . . . in oil refineries, chemical plants, and the many other places where no satisfactory substitute exists.

These time-honored properties of copper . . . rust-immunity, corrosion-resistance, heat conductivity . . . and easy fabrication . . . are some of the important reasons why copper finds such great demand in our war program.

ANACONDA from mine to consumer

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Anaconda Copper

THE AMERICAN BRASS COMPANY, GENERAL OFFICES: WATERBURY, CONN.

Subsidiary of Anaconda Copper Mining Company

(*Continued from page 20*)

William Wallace, Supt. of Filtration and Sewage at Detroit, brought a small laboratory kit of supplies with him and demonstrated methods of detecting poisons affecting water supplies, showing tests for arsenic, antimony, bismuth and various other salts. He called attention to the fact that such tests are only applicable in larger cities where considerable defense work is in progress.

Herbert Moore, Milwaukee Engineer, read a paper prepared by Emmons W. DeBerard, Resident Engineer on the new water supply at Centralia, Ill. Mr. DeBerard said in his paper that the old reservoir at Centralia was found to be located over a good oil producing area and that his firm was engaged to find some location which did not have oil under it. He was the only man in the community who was looking for a place without any oil! A complete study of the available sources was made and the plant is under construction at the present time at a cost of $723,000, being financed by 30-Year Water Revenue Bonds. A detailed explanation of the plant construction was given.

Louis T. Watry, Supervisor of Well Construction of the State Board of Health at Madison, outlined the structural requirements for sanitary well construction, presenting some tentative regulations which are being

(*Continued on page 33*)

MONITOR COVERS

For large meter pits Ford MONITOR Covers are ideal. They are made for 24", 30" and 36" tile, have a 20" lid opening and are 7" deep. Inner lid optional. All sizes have the Lifter Worm Lock. Catalog and further information on request.

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(*Continued from page 22*)

developed at the present time. He called attention to the various types of well conconstruction and the methods by which wells commonly become polluted. He emphasized the absolute necessity of making certain that the water supply be obtained from a source which was without pollution and that extreme care must be taken to prevent polluted water from coming in contact with the source of supply.

A series of round-table discussions was held Wednesday morning, October 21, the first discussion being "The Development of Water Utility Organizations for Defense." L. A. Smith, Supt. of the Water Dept. at Madison, presented the detailed instructions for the emergency organizations as developed at the Madison Water Dept., including the specific organization of various emergency crews and the assignment of all employees to their posts in case of emergency. Specifically, there were crews to co-operate with the Fire Dept. to shut off water in case of leaks, to service deep well pumping units, to provide for customers' service, as well as the regular transportation and repair crews.

O. J. Muegge, Engineer of the State Board of Health at Madison, outlined in detail the Mutual Aid Program as developed in Wisconsin and asked all those who had not sent in their Mutual Aid Inventories to do so at once. He reported that 60 per cent of them had already been received. Attention was called to the new P-46 regulations which require that 40 per cent of the materials for maintenance of transmission and distribution systems must come through the Mutual Aid Program.

Herbert Brown, Supt. of the Water Dept. in Milwaukee, outlined "The National Experience in Physical Protection of Utilities." This was a résumé of the information presented at the National Conference in Chicago in June. Mr. Brown described the various schemes adopted by certain of the large utilities and indicated that the cost of such protection should not exceed more than 5 per cent of the operating revenues, except in unusually hazardous locations, as far as precautions against bombing are concerned.

(*Continued on page 34*)

ZECO GREENSAND ZEOLITE

Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

ZEOLITE CHEMICAL CO.

90 WEST STREET **NEW YORK, N. Y.**

(*Continued from page 33*)

Walter Staeffler of Manitowoc spoke in favor of a retirement system for water utility employees and, at his suggestion, a resolution was adopted urging the next Wisconsin Legislature to pass the necessary enabling legislation to permit water utilities to install such a system.

Harry Jordan discussed P-46 in considerable detail, emphasizing the fact that the Mutual Aid Inventory system became an actual part of the new regulations adopted October 10. He told that no definite directive on the deferment of necessary water works employees had as yet been signed by Director Hershey of the Selective Service Board. He called attention to the fact that a water supply is essential to our war program and stated that water works superintendents should stay on the job, unless they were required for some specific war service.

At the afternoon session on Wednesday, F. J. Tharinger, Assistant Regional Director of the WPB, discussed water utilities and the War Production Board, outlining the situation as far as critical materials are concerned.

Herman Boll, Priorities Specialist of the WPB, explained detailed methods of obtaining supplies by the proper application of priorities and answered questions in specific cases.

The closing talk of the convention was given by Major William H. Carey Jr., San. Engr. of the U.S. Public Health Service. He emphasized the necessity of co-operation among utilities so as to make the most effective use of the materials in stock, and gave several examples of the way in which certain requirements had been taken care of by co-operation. He stressed the necessity of continuous vigilance with reference to the purity of water supplies, calling attention to the fact that the necessary chlorine was definitely available.

The new officers for the Section are shown in this JOURNAL.

William U. Gallaher of Appleton was named Wisconsin recipient of the Fuller Award.

L. A. SMITH,
Secretary-Treasurer

Report of Virginia Section Meeting

The "War Conference" designation of the Virginia Section's Ninth Annual Conference held at Richmond on November 5 and 6 aptly describes the context not only of the papers presented but also of the informal discussions that were to be heard throughout the two-day meeting. Total official registration was 117, of which thirty-seven were section members.

(*Continued on page 36*)

Trident
"LIMITATION" METERS

Left: Frost Proof Meter
Above: Split Case Meter

TRIDENT "Limitation" Meters are being made in all types and sizes to meet the material restrictions of War Production Board's Water Meter Limitation Order L-154. Trident's established policy of interchangeability of parts with those of meters already in service, and Trident's high standards of machining and workmanship are being strictly maintained. Required Cast Iron parts, such as main casings, are given a protective coating of corrosion-resisting paint. All steel bolts, studs, nuts and washers have a protective plating. Repair parts will continue to be available but the materials of which they are made will depend upon W. P. B. restrictions.

FOR VICTORY BUY U.S. WAR BONDS

• *Lambert and Thomson meters will not be manufactured for the duration of the war. However, repair parts for these meters will be available and will meet the W. P. B. material restrictions.*

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46

COOK Well Strainers

A reciprocal relation, the life and functioning of the one depending much on the other.

A. D. COOK, INC.

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COOK Deep-Well Turbine Pumps

(*Continued from page 34*)

No formal conference was scheduled for Thursday morning. The Thursday afternoon session comprised a Symposium on Co-ordination of Public Water Supplies With the Office of Civilian Defense. Federal, state and local levels were represented by speakers who explained the integration of their respective agencies into the total protctive plan.

Gordon E. McCallum of the Washington Office of Civilian Defense recognized the common purpose of all Civilian Defense Agencies and described the work of the national office as primarily to co-ordinate state water works agencies into the national plan, to disseminate pertinent information and to stimulate local interest in this vital preparedness effort. (His paper is presented elsewhere in this issue of the JOURNAL.)

As Co-ordinator of the Virginia State Council of Civilian Defense, J. H. Wyse characterized water works as "the most important utility" to our civilian defense, sanitation, fire protection and domestic function being dependent on its effective continuance. (His paper is planned for publication in the February issue of the JOURNAL.)

Col. Charles B. Borland, City Manager of Norfolk, E. F. Dugger, General Manager of the Water Com., Newport News, Charles E. Moore, Manager Water Dept., Roanoke (whose paper was read in his absence by Joseph P. Millikin), and Marsden C. Smith, Ch. Engr., Dept. of Public Utilities, Richmond, then summarized the measures taken locally for the protection of water works and for their rehabilitation in event of enemy action.

Norfolk has had a population increase of from 140,000 to over 200,000 in two years and a water consumption rise from 12 mgd. to 25 mgd. While basic protection can and is organized, the City cannot keep pace with present development nor provide guards, reserve protective stocks or take other material measures without Federal aid. Col. Borland feels that in vital areas protection should be by the Army Internal Security Force.

In Newport News every effort has been made to insure maintenance of water service in any emergency. The Hampton Roads area has become

(*Continued on page 38*)

PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

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An Ideal Packing for Water Works and Sewage Pumps and Valves

MABBS HYDRAULIC PACKING COMPANY, *Inc. 1892*

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FOR THIRSTY FACTORIES!

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Another advantage is that ARMCO Spiral Welded Pipe gives efficient, trouble-free service. Continued high flow capacity is assured by a smooth spun enamel lining that prevents tuberculation. Costly cleaning is out and pumping costs remain low. And especially important now, ARMCO "Spiral Welded" is shatterproof. Its ultimate strength is 50,000 to 60,000 lbs. per sq. in., and it will stretch 25 to 30 per cent before breaking.

ARMCO Pipe also is widely used *inside* plants for many varied industrial applications. Diameters run from 6 to 36 inches; wall thicknesses from 9/64 to ½-inch. You have a wide choice of coatings, joints and standard or special fittings. Write us for prices and shipping promises. The American Rolling Mill Co., Pipe Sales Div., Middletown, Ohio.

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ARMCO SPIRAL WELDED PIPE

MEETS A.W.W.A. STANDARD SPECIFICATIONS

(*Continued from page 36*)

one of the most vital war areas in the country. Like other communities in the district, the Newport News population has doubled in the past two years. To initiate adequate protection a survey was made. Reservoir cutoff dams were installed along with suitable appurtenances to minimize dependence on one dam or other structure. A new filter plant was recently completed. Raw water and filter water transmission lines were reinforced and relocated. Floodlights were provided. Supplemental artesian wells were drilled. Army and Navy personnel was called in to review precautions taken. Following this survey additional protection against bomb fragments was provided at transformer stations, pump stations and elevated tanks. Cinder block casement with block voids filled with wet sand were largely and very satisfactorily used. Isolated booster stations were also installed. The city is practically surrounded by salt water and a fire protection system from this source is presently being studied. Attention was called to the A.W.W.A. recommendation of works defense "weak points survey." Such a survey was urged as most valuable.

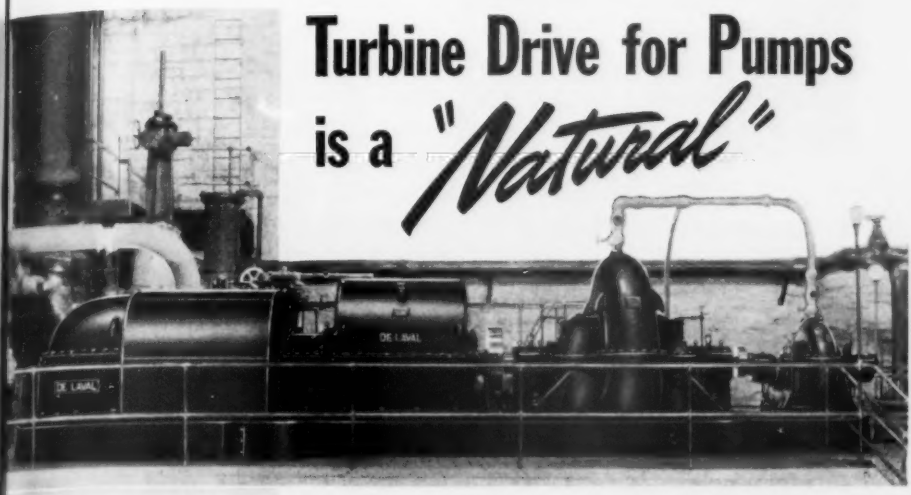
At Roanoke about one-half of the city supply is from one large spring, the remainder being from five other sources, one being used regularly. Protective measures have included floodlighting, a carefully laid-out catwalk, providing a shadowed guard area and 24-hr. guarding. Blackout switches, identification of all persons and equipment entering premises, radio communication arrangements, careful chlorination control and routine distribution system tests are established protective measures.

Marsden C. Smith as Chief Engineer for Public Utilities in Richmond is directly responsible for co-ordination of electric, gas and water protective measures. He feels protection measures to prevent "crackpot" saboteurs rather than "organized sabotage" from damaging works is a practical limit since no utility can be fully guarded or controlled. Local measures include guarding all vital structures with no "visitors" except with proper authority and then only when on business and with an employee escort. Repair stocks have been placed in five storage stations. Repair and maintenance men have been drilled and certain set automatically operative rules have been established to minimize the effect of such contingencies as quick pressure drop and plant or system damage. Valves have been checked and necessary repairs made. Also a plan has been worked out for controlled feeding of water into craters for fire suction hose supply. Generally a system of conservation, by cutoff and control, break location and planning is proposed for the raid duration with repairs to be made after the "all clear" is given. Three hundred and twenty-two volunteers supplement the regular utilities work force.

Discussion of the Defense Symposium papers brought out a number of weaknesses which will no doubt be corrected in the future, as well as

(*Continued on page 40*)

Turbine Drive for Pumps is a "Natural"



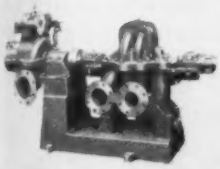
Geared pressure-stage turbine driving water works pump; 80 m.g.d. against 187 ft. head, using steam at 175 psi. and 533°F. This unit developed a duty of 222.8 million foot pounds per 1,000 lb. of steam, as corrected to contract conditions.

THE speed of steam turbine driven pumps can readily be controlled, either automatically or manually, to supply just the desired head and flow, thereby avoiding the great waste of power incurred in throttling motor-driven pumps to meet head and flow requirements.

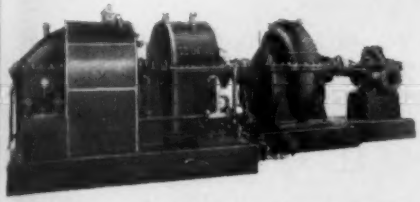
Large centrifugal pumps driven through speed reducing gears by De Laval multistage condensing turbines develop high duties, and are free from the transmission charges, losses and interruptions of service inseparable from motor drives.

De Laval velocity-staged turbines exhausting to feed heaters or to process show similarly high economies and are most sturdy and reliable drives for power plant or process pumps.

State your conditions and ask for Publication T-3525.

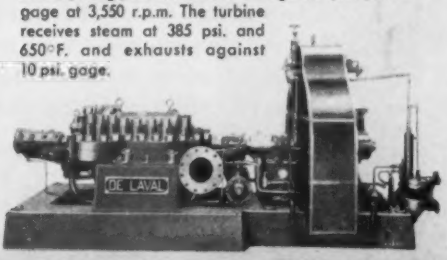


Velocity-stage turbine driving boiler-feed pump; 1,000 g.p.m. against 807 ft. head at 3,500 r.p.m.



Geared pressure-stage turbine driving main pump of 20,000 g.p.m. capacity against 148 ft. head and condenser circulating pump of 1,300 g.p.m. against 60 ft. head.

Velocity-stage turbine driving six-stage boiler feeder; 850 g.p.m. of 220°F. water against 1,600 psi. gage at 3,550 r.p.m. The turbine receives steam at 385 psi. and 650°F. and exhausts against 10 psi. gage.



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MANUFACTURERS OF TURBINES STEAM HYDRAULIC PUMPS CENTRIFUGAL PROPELLER ROTARY DISPLACEMENT MOTOR MOUNTED MIXED FLOW CLOGLESS SELF PRIMING CENTRIFUGAL BLOWERS and COMPRESSORS GEARS WORM HELICAL and FLEXIBLE COUPLINGS

(*Continued from page 38*)

several highly effective protective measures that can readily be applied in other communities. Mention should particularly be made of methods discussed for better co-ordination of efforts between federal, state and city defense agencies along established mutual aid lines.

The annual dinner was held at the Hotel Jefferson on Thursday evening. The Fuller Award presentation was made with E. C. (Gene) Dugger being the recipient in recognition of his "leadership . . . his efficient and meritorious handling of the difficult water supply situation in the Northern Hampton Roads area . . . his representation of the Association before Congressional Committees . . . for the assistance of communities whose public service facilities were rendered inadequate by defense and war activities and for his pioneering in the establishment of methods of government procedure whereby other sections of the country as well have been enabled to obtain federal assistance more readily in solving their water supply problems." Honored guests and new officers were introduced. A film, "Advantages of Attendance at A.W.W.A. Meetings" was exhibited by W. A. Welch, of the Industrial Chemical Sales Div. of the West Virginia Pulp and Paper Co.

The Friday morning session was devoted to Priorities and Substitute Materials. A. E. Gorman, Chief of the Water Production Section of W.P.B.'s Power Branch, discussed "Manpower and Materials as Related to the Water Works Industry." Mr. Gorman emphasized that for water works use many materials simply are not available and capital expenditures must be deferred and conservation practiced.

As Consulting Engineer for a number of large projects in the Hampton Roads area, Reeves Newsom discussed "Priority Effect on Large Installations." Difficulties have been many. Completion of one project, started before December 7, 1941, was delayed from May to September, 1942. The Chickahominy River 14-mgd. supply line was started by the City of Newport News, then completed under F.W.A. A limited AIC priority proved inadequate after June 19, 1942, and an A1A was assigned. This was increased to AA3 in August, then to AA2X in October. Contracts for the Nottaway River project for 42-in. supply lines and 2- to 25-mgd. pumping stations were negotiated in April following which there was approximately two months' delay in getting approval and priorities. Mr. Newsom indicated that the Water Production Section operating under WPB's Power Branch had done much to expedite these essential projects.

"The Cast Iron Pipe Situation" was discussed by Wilbur W. Winfree of the Glamorgan Pipe and Fdry. Co. Mr. Winfree pointed out that pig iron has for some time been subject to allocation rather than a priorities system. All manufacturers have had a recent pig iron reduction of 10 per cent. At the present time civilian orders cannot be assured of quick service unless they carry an AA2X priority.

(*Continued on page 42*)

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VALVES
HYDRANTS

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34. Address M & H Valve and Fittings Company, Anniston, Alabama.

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(*Continued from page 40*)

M. J. Siebert discussed "The Meter Situation." Several recent changes prevent any reasonable forecast but it is obvious that water works should adopt every possible meter conservation measure. Removal of meters from services consistently using less than minimum and use of these meters elsewhere was suggeted as one very practical measure.

"Water Works Laboratory Supplies" was the subject of a paper by L. C. Bird, President, Phipps and Bird, Inc., Richmond. About 98 per cent of such supplies are readily available. The remaining 2 per cent can be gotten only with difficulty, if at all. While priorities are not essential in all supplies, a good priority does expedite shipment. On all orders the "end use" must be stated.

"The Alum Situation" discussed by Fred E. Stuart of the Stuart-Brumley Corporation, Baltimore, cleared up many current misconceptions regarding the grade of alum now available. (Stuart's paper is given complete in this issue of the JOURNAL.)

Papers were presented during the Friday afternoon session by R. C. Clement, Division Manager, Wallace and Tiernan Co., on "Emergency Sterilization of Water Mains" and by A. E. Wilson, formerly Supt. of Filtration, Fredericksburg, Va., on the "Effect of Municipal Water Treatment on Industrial Use."

Mr. Clement sketched the history of main sterilization, then gave some of the presently accepted methods of treatment and testing. The "drop dilution" test was demonstrated. Attention was called to the need for study of lower chlorine concentration treatment possibly supplemented by the use of "wetting agents." In discussion, R. C. Bardwell described the evidently successful use of causticity for sterilization and L. H. Enslow and William W. Brush called attention to the importance of proper cleaning.

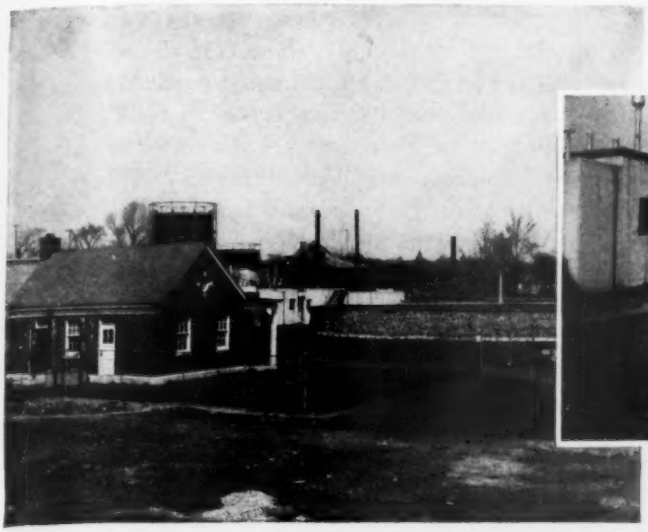
Mr. Wilson's paper discussed some of the industrial difficulties resulting from various methods of treatment, particularly for corrosion control. Ways of adapting treatment to consumer as well as distribution needs were brought out.

The Section was particularly gratified to have Dr. Abel Wolman describe some of the current activities of the A.W.W.A., as well as some of his other recent endeavors in and outside of this country. As usual, his remarks were most pertinent and timely and an inspiration to those who were privileged to be present.

The appreciation of the Section is extended to the retiring Chairman, R. J. Leveque, and to R. C. Bardwell who arranged the program and who is also the retiring A.W.W.A. Director. Their efforts were to a large degree responsible for the success of this meeting. New officers are listed elsewhere in the JOURNAL.

FRANK H. MILLER
Secretary-Treasurer

(*Continued on page 44*)



G. L. Palmer, Superintendent

Stroudsburg, Pa. USES MATHIESON CHLORINE & HTH *for sewage treatment*

"(And)... we are completely satisfied," says Gilbert L. Palmer, Superintendent

● Mathieson Chlorine and HTH have been used in this modern sewage treatment plant at Stroudsburg, Pa. since the plant was first put in operation in 1937. Both products have been used continuously since that time . . . rendering "completely satisfactory" service. Mathieson Chlorine for post-chlorination and HTH in the dosing chamber for the elimination of filter flies—also for regular dosing of the beds.

Satisfactory service is an old story to Mathieson Chlorine and HTH. Stroudsburg is only one of hundreds of cities and towns that find Mathieson sanitation service both dependable and efficient. In Mathieson Chlorine you get *pure* chlorine and prompt delivery in well kept, trouble-free containers. HTH, also, in addition to its use on everyday sanitation jobs, should be kept on hand for quick emergency service requiring a mobile, high-test chlorine carrier.

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(*Continued from page 42*)

A purchaser of an electric motor must show that the horsepower of the motor he is applying for is no greater than that required to do the job, according to a provision in General Conversation Order L-221, announced on December 4, 1942, by the Director General of Operations.

Officials of the General Industrial Equipment Division have pointed out that it has been the practice of industry for many years to "over-motor," that is, to apply greater motor capacity than necessary for the job to be done. As a means of stopping this practice, the order applies certain measurements by which the actual power requirements may be related to the horsepower of the motor applied for by the purchaser.

Conservation Order L-221 prohibits the delivery or acceptance of motors, unless they comply with certain standard specifications and are of the simplest practicable, mechanical and electrical design. It also requires the purchaser to certify and show reason why he must have a motor of a special type, and it restricts the use of special types to the conditions and the purposes for which they are required. For example, it limits the use of explosive-proof motors to hazardous locations.

A. S. Behrman, Chemical Director for Infilco, Inc., Chicago, has been on active duty for some time as Lieutenant Colonel in the Sanitary Corps, stationed at Fort Shafter, Territory Hawaii.

ANY OLD JOURNALS FOR SALE?

Do you have back issues of the JOURNAL which you will make available to the Association to help replenish its stock? Send a post card telling which you have of the numbers listed below and 50 cents will be paid for each copy obtained.

1922—March, May
1924—January, July, September
1926—January, February, April, May, June, September, November
1929—January, February, April
1930—January, February, April, May, March, November, December
1936—January, March, April, November, December
1937—January, February, March, July, October
1938—January
1939—January, March, October
1940—January
1941—July, September
1942—January

American Water Works Association

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NEWS OF THE FIELD

Many times and in many places during the past year of war, it has been proper to remind water works men that theirs was a public service essential to the war effort. Many times it has been necessary to say to men in key water works positions that their particular task was an essential one and that they could not properly enter military service until a replacement man, or perhaps a woman, was ready to carry on. It has been necessary to say to some men that there was substantial doubt that, unless manpower conditions as a whole change materially, such men could possibly render as important wartime service in uniform as they were already rendering as civilians.

It is indeed gratifying to have such ideas authoritatively emphasized by the country's Manpower Administrator Paul V. McNutt. In an official release dated January 20, 1943, Mr. McNutt said:

"Although a great deal of emphasis has been laid on the fact that essential workers are vital to war production, there is still much work ahead in registering this fact with the public, and with the workers themselves.

"Occupational deferment usually indicates that a man is making a more valuable contribution to the war, right now, than if he were in uniform. Such men should remember that our fighting men need materials and supplies to carry on their fight, plenty of them.

"It is the War Manpower Commission's job to see that the nation's manpower is properly allocated—to supply the men for our fighting forces through Selective Service, and at the same time to supply the workers for producing the goods those fighting men need. We are in the position to see the overall picture—the overall need—which the individual worker cannot see.

"We realize how difficult it is for workers in civilian clothes to explain to their friends and neighbors why they are not in the armed forces. The public should realize that the young, able-bodied man in civilian clothes may be anxious to join the armed forces. It simply happens that his work is too important to induct him at this time, or, perhaps, he may have already been considered and did not measure up to the physical standards of the armed forces, even though he has a healthy outward appearance.

"There are some 3,000 occupations which have been designated as essential occupations. Men in these occupations will be kept in those jobs until changing circumstances, such as the training of suitable replacements, make it advisable to induct them into the armed forces."

(*Continued on page 2*)

(*Continued from page 1*)

On January 19, 1943, the Associate Director of the Manpower Bureau of Program Planning and Review advised the A.W.W.A. that the essential list of occupations for heating, power, water supply and illuminating services had been approved by the Essential Activities Committee of the War Manpower Commission and would be officially released within the very near future. When/as this list becomes available, it will be sent to every A.W.W.A. member.

State, county and municipal governments need no longer file with the National War Labor Board certificates explaining adjustments in wages or salaries of employees. The National War Labor Board and the Commissioner of Internal Revenue have jointly announced that "statutory budgetary controls are operating to keep salary and wage movements of state and local agencies within very narrow bounds." Since the institution of the order on November 12, there has been no occasion to question any adjustments made by any of the state or local agencies, hence the determination of the filing of certificates.

The Water Production Section of the WPB Power Division now has the following personnel, listed with their title and home city: Arthur E. Gorman, Chief, Chicago; Newton B. Lyle, Principal Water Engr., Scranton, Pa.; M. F. Kunkel, Engr., Silver Spring, Md.; E. L. O'Brien, Sr. Engr., Syracuse, N.Y.; R. L. McGrath, Engr., Arlington, Va.; J. Walter Ackerman, Engr., Munnsville, N.Y.; M. D. Corbin, Engr., Detroit, Mich.; W. D. Williams, Engr. Beverly Hills, Calif.; H. V. Wenger, Engr., Indianapolis, Ind.; W. L. Picton, Principal Engr., Nashville, Tenn.; V. J. Tinghir, Sr. Engr., Forest Hills, N.Y.; H. Lloyd Nelson, Principal Engr., Wyncote, Pa.; F. H. Weed, Principal Engr., Chevy Chase, Md.; and F. J. Henson, Principal Engr., Washington, D.C.

No Tax on Freight—The U.S. Revenue Act of 1942 imposed a new tax on transportation of property. The rate is 3 per cent of the transportation charge on all freight other than coal which is 4 cents per short ton. The Commissioner of Internal Revenue has ruled that this section does not apply to state and local governments if the transportation charges are paid by the state or local government directly to the carrier. The municipality need not file an exemption certificate. It should simply refuse to pay the tax. Where, however, the shipper pays the transportation charges on property shipped to the municipality, the shipper is liable

(*Continued on page 4*)

Dorr-equipped for better water treatment

★ Dorreo Squarex Clarifiers and Dorreo Flocculators installed in a single tank are ideal running mates in modern water purification practice.

All the advantages and savings inherent in square tank design are possible with the installation of these units—no matter what the size of the plant may be. No matter either, whether it involves the use of existing plain sedimentation basins or entirely new construction!

That Dorreo Squarex's and Flocculators *can* be tailored to fit any job—big or little—involving old or new construction—is illustrated by the following examples.

BIG PLANT—NEW CONSTRUCTION

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Type: Lime-soda process plus zeolite softeners

Capacity: 100 M.G.D.

Equipment: 2 Dorreo Flash Mixers, 2 Squarex Clarifiers and 2 units of Flocculators

Cons. Engrs.: Hoover and Montgomery, Columbus, Ohio

SMALL PLANT—NEW CONSTRUCTION

FOLSOM STATE PRISON CALIFORNIA

Type: Coagulation

Capacity: 2.0 M.G.D.

Equipment: Dorreo Flash Mixer, Squarex Clarifier and Flocculator

Design: Division of Architecture, Cal. Dept. of Public Works—W. H. Rockingham

BIG PLANT—EXISTING PLAIN TANKS

KANSAS CITY WATER WORKS, KANSAS CITY, MO.

Type: Presedimentation followed by softening

Design Capacity: 100 M.G.D. present—150 M.G.D. future

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ATLANTA TORONTO CHICAGO DENVER LOS ANGELES

(*Continued from page 2*)

for the tax even though he is reimbursed for the charges by the municipality and the municipality may obtain no refund.—from *Municipal Finance News Letter* for January 1943.

(*Note:* This is a rectification of information given on p. 2 of the January 1943 News of the Field.)

R. E. Lawrence, Major in the Corps of Engineers, stationed at Washington, D.C., has been promoted to the rank of Lieutenant Colonel. Col. Lawrence continues on his current assignment in the Engineering Branch, Construction Div., Office of Chief of Engineers. Before entering military service, he was associated with Black & Veatch, Consulting Engineers of Kansas City. Col. Lawrence was previously Asst. San. Engr. of the Public Health Dept. of Kansas.

Jay T. Nicholson is now Asst. to Chief of Boiler Feedwater Unit, Repairs & Utilities Branch, Office of the Chief of Engineers, War Dept., Washington, D.C. In this post he has charge of checking for compliance with proper feedwater treatment procedures in all Army posts in this country. The U.S. Bureau of Mines is giving analytical service to the War Dept. in this connection.

Mr. Nicholson was for the past two years Service Engr. for the National Aluminate Corp., covering Virginia and North and South Carolina on problems of boiler feedwater treatment, softening, etc. After being graduated in Chemical Engineering from N.C. State College in 1936, he spent a year with John T. Lewis & Bros. Co. of the National Lead Co., Philadelphia. He was also in charge of all boiler feedwater treatment for three years for R. J. Reynolds Tobacco Co., Raleigh.

James R. Cook is now Associate Engineer for Parsons, Klapp, Brinckerhoff & Douglas, serving as Office Manager for Venezuelan work consisting of design and supervision of various projects—water supply,

(*Continued on page 6*)

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Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

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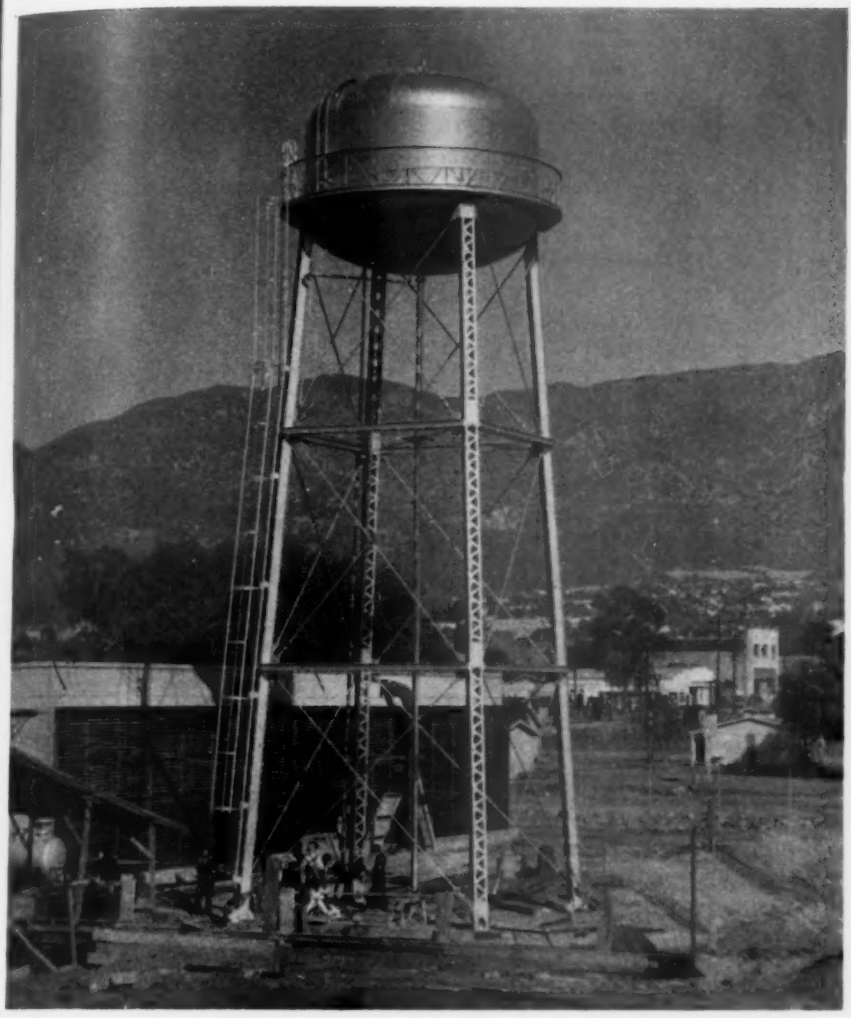

Gravity Pressure for Boiler Feed Water

A Pacific Coast city built a steam generating plant to supplement the usual power sources in taking care of the power needs of several rapidly expanding aircraft plants. The 30,000-gal. elevated tank shown above was installed to provide boiler feed make-up water by gravity pressure.

CHICAGO BRIDGE & IRON COMPANY

BIRMINGHAM CHICAGO WASHINGTON
PHILADELPHIA NEW YORK CLEVELAND
SAN FRANCISCO HOUSTON TULSA

(*Continued from page 4*)

sewers, highway bridges, port and river improvements and hydroelectric development. He was previously Asst. Chief San. Engr. with Caribbean Architects, designing water supply and sewer projects for Army bases in the Caribbean. In 1940–41, he was Design Engr. with the Philadelphia Water Board on Philadelphia's planning of Improvements.

T. E. Jones, formerly Supt. of the Bridgeport, Ala., City Water Works, is now Asst. San. Engr., Northern Field, Office of Post Engineer, Tullahoma, Tenn.

Michael J. Harmonay, Supt. of Yonkers, N.Y., Bureau of Water, has left that position, which he had held for the past 11 years, to resume charge of his plumbing and heating concern. Patrick F. Cleary, General Foreman in the Bureau, has been appointed to succeed Harmonay. Cleary is a veteran employee, having been 49 years in service.

Harvey F. Ludwig has been appointed Asst. San. Engr., U.S. Public Health Service, Regular Corps, and is stationed at the Malaria Control in War Areas Office in Atlanta, Ga. He has previously been employed by the East Bay Cities Sewage Disposal Survey, Berkeley, Calif., and by the Western Regional Research Laboratory of the U.S. Dept. of Agriculture. He has done post-graduate work at the University of California, having been co-author with Prof. Wilfred F. Langelier of "Graphical Methods for Indicating the Mineral Character of Natural Waters" in the March 1942 JOURNAL. This paper was judged the best paper in the JOURNAL in 1942, for which the authors will be awarded the Goodell Prize at the 1943 Conference.

William L. Herron, New York State Repr. for Worthington-Gamon Meter Co., has changed his headquarters from Hudson, N.Y., to Oswego, N.Y., for the duration.

W. M. Lewis, formerly District Manager for Layne New York Co., is now Vice-President for the Company, with headquarters at 505 Market St., Camden, N.J.

(*Continued on page 8*)

COOK Well Strainers

A reciprocal relation, the life and functioning of the one depending much on the other.

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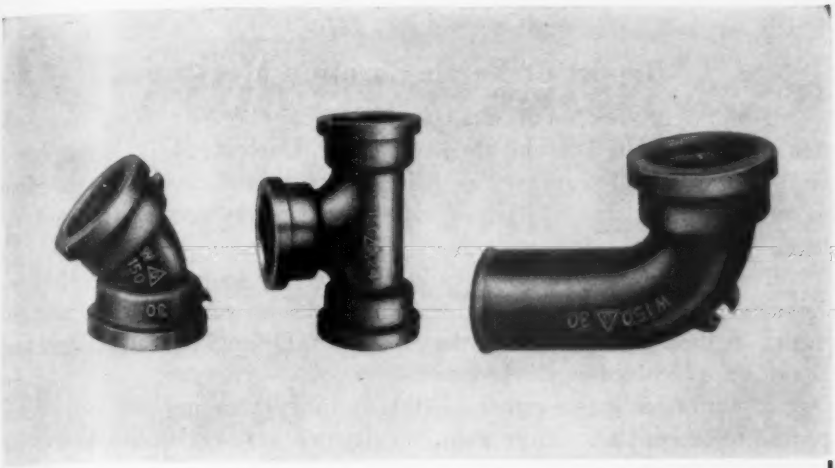
COOK Deep-Well Turbine Pumps



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SOCKET FITTINGS BY

GRINNELL

WHENEVER PIPING IS INVOLVED

(*Continued from page 6*)

Report of North Carolina Meeting

The Twenty-Second Annual Conference of the North Carolina Section was held at the Washington Duke Hotel, Durham, N.C., November 3 and 4. One hundred ninety-two delegates registered this year, including many wives. A large number of manufacturers' representatives were on hand.

The meeting this year was designed primarily to provide wartime information with the emphasis on technical sessions rather than entertainment. A luncheon in honor of the A.W.W.A. Officers and a Banquet and Dance were included on the program.

An informal get-to-gether on the evening preceding the conference proved to be popular. More than 70 delegates were registered during the one hour that the desk was open. Good fellowship and old fashioned "bull sessions" were the order and many groups and individuals continued to swap yarns and experiences far into the night.

The Tuesday Morning technical session was called to order by Chairman Williams at the appointed hour. The Chairman outlined the activi-

(*Continued on page 10*)

SAVE FOR DEFENSE

EVERYWHERE Americans are being asked to "SAVE FOR DEFENSE." Water works superintendents, engineers and public officials can do more in this connection by investigating the National Method of water main cleaning. This method restores the carrying capacity of pipe to at least 95 per cent of that of new mains, thereby eliminating the necessity for purchase of new mains. Aside from this the National Method makes possible lower pumping costs, greater delivery, reduced insurance rates and clean water.

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51

(*Continued from page 8*)

ties of the Section throughout the year and reported that the membership of the Section had increased materially. After the appointment of special committees the technical session was opened.

"War Time Water Supply Problems" was the title of a paper prepared by James W. Kellogg, Asst. Director, State Laboratory of Hygiene, Raleigh, N.C. Mr. Kellogg's paper dealt generally with the possibility of contamination of water supplies by war gases and poisons, and pointed out the methods of detection being recommended to water chemists throughout the state.

Maj. D. W. Evans, Regional San. Engr., U.S.P.H.S., Office of Civilian Defense, Atlanta, Ga., presented a paper, "Maintenance of Public Water Supplies for Civilian Defense" which is given in full in the January 1943 JOURNAL.

Warren H. Booker, Director, Eng. Div., N.C. State Board of Health, lead the discussion of Maj. Evans's paper, stressing the Ten-point Program for Emergency Preparedness of Water Works put into effect by his department.

The technical sessions were adjourned to the scheduled luncheon, at which Mayor Pro Tem. Kenan Rand, City of Durham, delivered the principal address, welcoming the delegates to the City. W. A. Welch, Sales Repr. of the Industrial Chemical Sales Div., presented a movie designed to promote a membership in the A.W.W.A., concluding the luncheon.

The afternoon technical session was opened by the presentation of a paper, "The Value of Pitometer Distribution Studies to Meet Present Emergencies and Post War Conditions" by E. Shaw Cole, Chief Engr., The Pitometer Company. (Mr. Cole's complete presentation appears in the December 1942 JOURNAL.)

Arthur E. Gorman, Chief of WPB's Water Supply Section, addressed the conference on the joint problems of the WPB and water utilities. Mr. Gorman outlined the current situation with respect to priorities, critical materials and inventories. He emphasized that expansions and capital ex-

(*Continued on page 13*)

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TENNESSEE CORPORATION
Ferri-Floc
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TENNESSEE CORPORATION
ATLANTA, GEORGIA LOCKLAND, OHIO

(*Continued from page 10*)

penditures must be deferred wherever possible. Mr. Gorman explained in detail the purposes behind, and the recognized need for, the October 10 revision of Order P–46. He expressed appreciation for the constructive assistance given to the WPB by the officers of the A.W.W.A. A lengthy discussion on the details of Order P–46 was held at which time Mr. Gorman answered specific questions from the floor of the meeting.

"Water Main Cleaning in the War Effort" by Clinton Inglee, President of the National Water Main Cleaning Company, was the concluding feature on the afternoon's program. (Mr. Inglee's paper is published in full in the December 1942 JOURNAL.)

The evening Banquet session had more than two hundred delegates and wives in attendance. The Chairman introduced the distinguished guests and recognized Albert O. True, Chairman of the Fuller Award Committee, who read the citation and the unanimous recommendation of the Committee. It was awarded to Walter McKinney Franklin, Supt. of Plants, Charlotte, N.C.

M'Kean Maffitt, donor of an annual award, the Maffitt Membership Cup, presented the cup this year to Warren H. Booker for securing the largest number of new members for the Section.

The Master of Ceremonies, Luther H. Barbour, entertained the guests in a humorous vein before introducing Harry E. Jordan who delivered the banquet speech in place of Abel Wolman who was previously scheduled to speak.

A dance given through the courtesy of the Durham Water Dept. followed the Banquet. Jimmie Fuller and Orchestra furnished the music.

Wednesday morning the technical session was opened by M'Kean Maffitt, Superintendent, Water Department, Wilmington, N. C., who read a paper entitled "A Superintendent's Nightmare." Mr. Maffitt's paper dealt humorously with the problems experienced by himself in rapidly expanding the water supply and system at Wilmington, N.C. (See the January 1943 JOURNAL for his paper complete with cartoons.)

R. W. Luther, Plant Supt., Elizabeth City, N.C., delivered a paper entitled "Well Field Operating Experiences at Elizabeth City." The author illustrated this detailed presentation with slides.

The group were taken on a conducted tour of inspection through the water and sewage treatment plants at Camp Butner, N.C. A large number of delegates participated in this event.

The section's new officers are shown on p. iv at the front of this JOURNAL.

R. S. PHILLIPS
Secretary-Treasurer

(*Continued on page 14*)

(*Continued from page 13*)

Report of the West Virginia Section Meeting

The Fourth Joint Meeting of the West Virginia Section and Seventeenth Conference on Water Purification was held November 11–13 at the Chancellor Hotel, Parkersburg, W.Va. The official registration was 113 which included 30 of the Section's 69 members, giving a Henshaw Cup percentage of 43.5.

The Conference opened Wednesday evening with registration and a dutch treat get-together with a buffet spread and entertainment.

Chairman Golden Underwood called the technical session together on Thursday morning, beginning with an address of welcome by Earl Stevens, Mayor, Parkersburg. A response was given by J. C. Edwards, Huntington.

W. G. Yates, Constr. Engr., City of Wheeling, read a detailed paper on "Waste Water Survey at Wheeling." The survey increased the percentage of water accounted for from 62.5 to 82 per cent and saved the city 1.7 mgd., or an annual savings of $31,080.00.

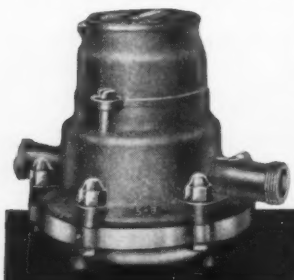
"Developing a Large Underground Water Supply for Industrial Use" was the topic of an illustrated presentation by G. E. Hauer, Water Supervisor, General Chemical Defense Corp., Point Pleasant. This excellent paper described the radial well as developed by the Ranney Water Collector Corp. The ground water resources were discussed in regard to location, physiography, method of investigation, hydro-geological conditions and pumping tests. Construction procedures and advantages of the Ranney Water Collectors were given.

E. E. Chandler, Chemist, Beckley Water Co., Beckley, read a paper entitled "First Year of Operation—Beckley's New Water Supply." Kodachrome slides were used to illustrate this interesting paper. Break-point chlorination has been the most effective treatment for the removal of odor, taste, iron and color at Beckley.

The afternoon session on Thursday afternoon was opened with a discussion by W. W. Towne, San. Engr. (R), U.S. Public Health Service, and Regional Sanitary Engineer, Office of Civilian Defense, Cleveland,

(*Continued on page 16*)

NIAGARA IRON CASE WATER METERS



provide wartime copper conservation plus the time-proved Niagara design. They comply with victory-meter limitations. Works are interchangeable with American Bronze Case Meters.

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A DEPENDABLE SELF-CAULKING JOINT COMPOUND FOR CAST IRON BELL AND SPIGOT WATER MAINS

HYDRO-TITE is a self-caulking sulphur base jointing compound used to joint bell and spigot cast iron water mains and soil pipe. It comes in powder form which insures uniformity and quick melting.

When poured into a joint, HYDRO-TITE immediately solidifies upon contact with the metal and bonds to both the surfaces of the bell and the spigot for the entire depth of the joint. It requires no caulking and after pouring a joint, water pressure may be immediately applied.

HYDRO-TITE is easy to use, no skill being required to make joints that are tight from the start. Joints made with HYDRO-TITE will stand any pressure the pipe will stand.

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FIBREX was designed for use with Hydro-Tite and other self-caulking compounds, but is entirely suitable also for joints made with lead, and for Sani-Tite and other asphalt sewer joint compounds. Thousands of pounds of Fibrex are already in service on water lines throughout the country.

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(*Continued from page 14*)

Ohio, on "Mutual Aid Program." Considerable discussion followed this paper and a better understanding was reached.

E. J. McClees, Dist. Mgr., War Production Board, Charleston, enlightened the conference on priorities in his paper, "Current Status of Priorities."

"Scrap Collections at Water Works" was the title of a timely paper by James Waltz, Chairman, Wood County Scrap Collection, Parkersburg. He pointed out that a considerable amount of valuable scrap is lying in and near water plants.

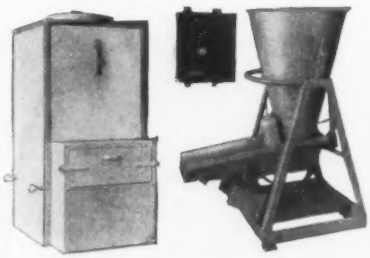
Harry E. Jordan, Secy., A.W.W.A., extended the greetings of the parent association and discussed and supplemented the three previous papers under the title "The A.W.W.A.'s Interest in Mutual Aid, Priorities and Salvage."

The Friday morning session opened with H. W. Speiden, Vice-Chairman, presiding. A motion picture in color, "Bill Jones Joins the A.W.W.A. and Attends the Conference in Chicago" was presented by W. A. Welch, Industrial Chemical Sales Div., West Virginia Pulp and Paper Co., Philadelphia.

The remainder of the morning's technical session was turned over to a symposium and interesting discussion on "Extending the Useful Life of

(*Continued on page 18*)

SYNTRON



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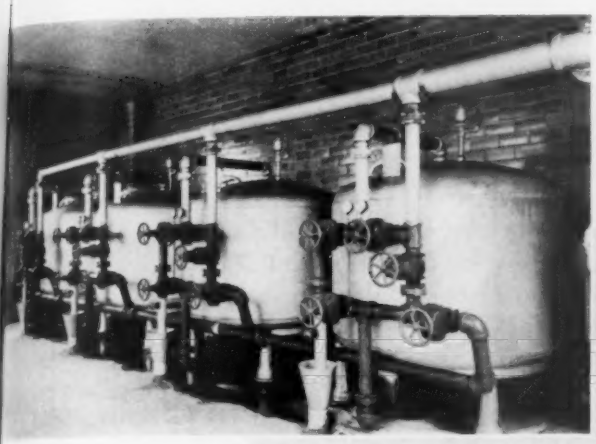
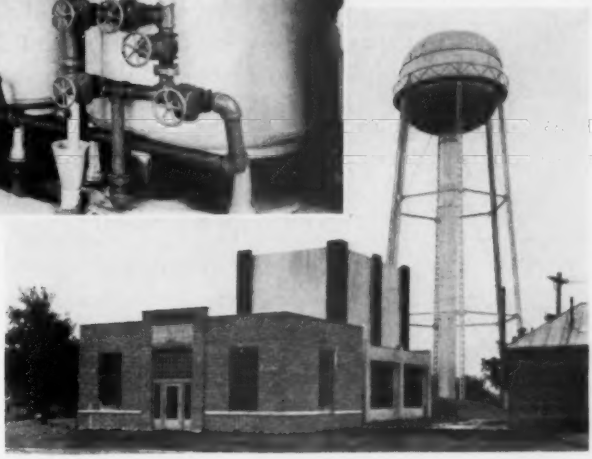


(Left) The four Graver Iron Removal. Filters installed in parallel.

(Below) Exterior of the pumping and filtering works.



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licks another tough iron removal job

A Minnesota municipal water plant has as its water supply one 12″, 600 foot well and one 10″, 400 foot well with a total output of 144,000 gallons per day. The water contains an unusually large amount of iron, which was evidenced by heavy stains in sinks and toilet bowls.

PROBLEM: How to remove the iron from the water supply most efficiently and economically.

SOLUTION: The installation of a Graver Pressure Type Iron Removal System consisting of a Pressure Aerator and four Graver Iron Removal Filters installed in parallel and having a capacity of 100 gallons per minute.

RESULTS: The Superintendent reports that since the installation was made there has been absolutely no trace of iron in the water and no further staining of sinks and toilets. He also states that the cost of operation is extremely low.

Whatever your water conditioning problem may be, you'll find it worthwhile to consult Graver.

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(*Continued from page 16*)

Water Works Material." The various papers and authors included were as follows:

(1) "Repairs to Concrete Structures"—Lee Davis, Repr., Portland Cement Assn., Charleston.

(2) "Emergency Repairs to Cast Iron Pipe"—S. E. Linderman, Eastern Sales Mgr., U.S. Pipe & Foundry Co., Philadelphia.

(3) "Maintenance of Electric Motors"—E. C. Jones, Dept. of Electrical Engineering, W.Va., University, Morgantown.

(4) "Welding as a Maintenance Tool for Water Works Equipment"—L. E. Jones, Dept. of Mech. Engr., West Virginia University, Morgantown.

(5) "Maintenance of Water Meters"—John Devine, Chief Meter Man, Parkersburg Water Works.

The morning session was closed with the business meeting. New officers elected for the coming year are shown in the front of this JOURNAL.

The afternoon session on Friday was opened with a sound motion picture in color entitled "The Construction and Installation of the Stone Canyon Reservoir Supply and Outlet Lines." It was presented by The Barrett Div., Allied Chemical and Dye Corp., New York.

(*Continued on page 20*)

"STOP" says RUSTA RESTOR TRADE MARK REGISTERED PATENTED PATS. PEND. to RUST IN STEEL TANKS

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fly above our foundries and 'shops where the wheels of industry are humming night and day in the united effort for freedom's preservation.

More permanent, however, than the products for war are the BUILDERS VENTURI METERS, VENTURI CONTROLLERS, and CHRONOFLO TELEMETERS in the water supply systems and purification plants throughout the United States. Day in and day out, they play a vital role in the economical production and conservation of the water supply.

Back in the old days, second-rate Roman sculptors who made unsightly nicks in the marble would secretly patch up the flaws with a mixture of wax and marble dust. These patches would drop out later on and honest artists suffered so much that they began labelling their handiwork "Sine Cera" (i. e., "Without Wax"). From this we derive our word "sincere" meaning honest, genuine, real.

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BUILDERS
WATER AND SEWAGE WORKS
Equipment

(*Continued from page 18*)

"A Round Table Discussion of Break-Point Chlorination" gave interesting practical experiences in this important method of treatment. The discussion revealed that break-point chlorination was eliminating tastes and odors at many plants where previous methods had failed. Most of the operators do not use ammonia, and in the majority of cases common sense, "rule of thumb" or practical experience in the particular plant determine the dosage of chlorine. Advantages, other than the elimination of taste and odor were cleaner filters, elimination of mudballs, use of heavily polluted supplies, and in some cases more economy. Chlorine dosages were reported as high as 35 ppm. Presiding Chairman, P. D. Simmons, Chemist, Weirton Improvement Co., led the round table discussion. Men called to the round table were: Eugene Brown, Weston; A. L. Todd, Wheeling; E. E. Chandler, Beckley; D. H. Clark, Welch; J. R. West, Weston; and H. K. Gidley, State Health Department, Charleston.

The technical session was completed by an inspection trip to the Parkersburg Water Plant. Treatment processes of the ground water supply at this 4-mgd. plant are aeration, sedimentation, filtration, zeolite softening, and chlorination.

(*Continued on page 23*)

With the coming of '43 we enter our eighty-sixth business year. A long life of business integrity and top quality products . . . a pledge of absolute reliance upon the KUPFERLE mark . . . unfailing service under all conditions of every Kupferle Fire Hydrant.

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If your compound is *Tegul*-MINERALEAD, there'll be no troubles arising from shaking • The truck or freight car that transports *Tegul*-MINERALEAD to you may outdo the liveliest cocktail shaker, but its jolting won't matter in the least • T.M. reaches the job exactly as it was mixed at our plant —100% correct • And that's merely *one* of many advantages of T.M.'s ingot form • Write for more information about this Time-, Labor- and Money-saving Compound for Jointing Bell & Spigot Main

The ATLAS MINERAL PRODUCTS CO. *of Pa.*
Mertztown, Pennsylvania

Tegul-MINERALEAD

(*Continued from page 20*)

On Friday evening the annual banquet was held with J. K. Buchanan, Vice-Pres., Monongahela West Penn Public Service Company, Fairmont, serving as Toastmaster. Toasts were given to the Chairman and Chairman-Elect.

The George W. Fuller Award Committee announced the selection of Mentor Hetzer, Moundsville, as the recipient of the Fuller Memorial Award. Immediately after the banquet and ceremonies, entertainment was provided by a Parkersburg dancing school and Negro quartet.

J. B. HARRINGTON
Secretary

The Pomona Pump Co. has been acquired by the Joshua Hendy Iron Works of Sunnyvale, Calif. Also acquired with Pomona Pump was its subsidiary Westco Div. and the Crocker-Wheeler Electric Mfg. Co. The Joshua Hendy Iron Works is primarily concerned with mass production of marine engines for the Maritime Commission. The production capacities of the newly acquired organizations will be co-ordinated in the work of powering and fitting Navy and merchant vessels.

(*Continued on page 32*)

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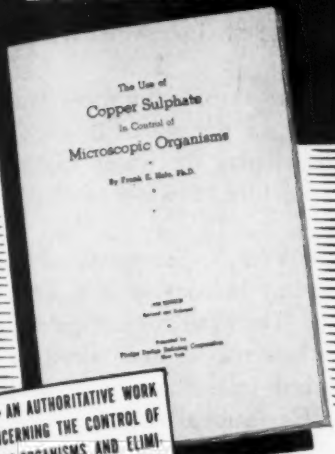
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This revised and enlarged edition, written by Dr. Frank E. Hale, describes in complete detail methods of control of the various forms of microscopic life commonly dealt with in water supply systems. Descriptive material includes 48 beautifully clear photomicrograph studies of the organisms discussed. Simplified methods of applying copper sulphate are also well diagramed and fully illustrated by photographs.

Thousands of copies of this 44 page book have already been distributed throughout the world. *Plant engineers and others concerned with this subject should not be without* "THE USE OF COPPER SULPHATE IN CONTROL OF MICROSCOPIC ORGANISMS." Write for it today on your business letterhead.*

* Unfortunately, because of the cost of preparation of this book, it is necessary to limit its distribution to those who are professionally occupied with this subject.

† Director of Laboratories, Dept. of Water Supply, Gas and Electricity, N. Y. C.

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Used to Protect Atlanta's New Filtering Plant

WHEN seven new filtering units were added to Atlanta's water system in 1941, increasing the capacity of the Filtration Plant to 72,000,000 gallons daily, exposed steel pipe and fittings in the gallery were lined with hot applied Bitumastic 70-B Enamel. The buried pipe outside the Water Works Building was also lined, and, in addition, was coated on the outside to protect it against soil corrosion.

Because of its strong adhesion, great flexibility, ability to withstand a wide range of temperatures, and demonstrated record of performance in protecting steel against corrosion, Bitumastic 70-B Enamel has been a standard specification of many water departments for many years.

Send for booklet "Bitumastic Protection for Water and Sewer Pipe Lines."

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★ BRANCHES IN PRINCIPAL CITIES ★

(*Continued from page 23*)

Report of Kentucky-Tennessee Section Meeting

Paducah, Kentucky, October 19–21, 1942

The meeting was called to order at 10:30 A.M., October 19, by Chairman R. R. Harris. Addresses of welcome were given by the Hon. Pierce E. Lackey, Mayor of Paducah, and Roy M. Shelbourne, Attorney for the Paducah Water Works. Henry M. Gerber, Pres., Louisville Water Co., responded to these talks.

After the reading of reports and appointment of committees Howard D. Schmidt, Section Director, spoke briefly on the splendid work now being done by the A.W.W.A., especially in keeping the water works profession up to date on the rapidly changing picture of water works in the war effort.

In the afternoon Harry E. Jordan, A.W.W.A. Secretary, addressed the body, stating that no water works man may be considered a slacker if he is doing a good job at his water works. The need for competent men on the home front is great and water works must be maintained as this work is most important. He then explained fully the new P-46 order especially as it applies to inventories. He emphasized the fact that

(*Continued on page 34*)

There are more Layne Wells and Pumps serving cities throughout the world than any other kind made. Layne Wells and Pumps are known as the most efficient ever built. They last longer and in upkeep cost have an amazingly fine record. They seldom need repairs of any nature. Write for latest catalogs, bulletins, folders, etc. No obligation. LAYNE & BOWLER, INC., Memphis, Tenn.

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Standard—
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Non-Rising Stem—Outside Screw and Yoke—Hub End—Flanged End—Ends to Fit any Type Pipe.

Also—Floor Stands, Shear Gates—Tapping Sleeves and Valves, Flap Valves and Mud Valves.

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How Copper Helps to Fight the War

OUR COUNTRY'S war needs require all the copper and the copper-zinc alloy, brass, that would otherwise go into such familiar peacetime uses as service lines, rustproof plumbing, or automobile radiators.

Today, a major part of available copper and zinc is needed for ammunition—cartridge cases, rotating bands on shells, time fuses, etc.

Tremendous quantities of copper go into wire and cable for vital electrical conductors in the war industries—in tanks, and bombers, and battleships . . . still more copper is needed for a variety of other uses . . . in naval and merchant ships . . . in oil refineries, chemical plants, and the many other places where no satisfactory substitute exists.

These time-honored properties of copper . . . rust-immunity, corrosion-resistance, heat conductivity . . . and easy fabrication . . . are some of the important reasons why copper finds such great demand in our war program. 4234B

ANACONDA
from mine to consumer

Anaconda Copper

THE AMERICAN BRASS COMPANY, GENERAL OFFICES: WATERBURY, CONN.
Subsidiary of Anaconda Copper Mining Company

(*Continued from page 32*)

material is scarce, will be more so, and we must do more with less until the material situation improves.

R. D. Sheldon of WPB's Industrial Salvage Section made a plea for scrap material. He explained the purpose of the various sections of the organization and the endeavor of each. He requested that all plants make a survey for scrap material if none has yet been made and turn in as scrap all material which is not being used at the plant or which cannot be used elsewhere. Material or machinery which is not used or cannot be used but is in usable condition should not be disposed of as junk but should be offered to other plants where it may be used.

A paper "Can American Water Systems Provide for Civilian Defense?" was read for Kenneth J. Carl by J. R. Snyder, Kentucky Actuarial Bureau. Maj. D. W. Evans of the U.S. Public Health Service stated that in the Atlanta region about 95 per cent of the water works had no inventory record at the end of 1940. He expressed the hope that it may be possible to carry an assumed inventory to correspond to the size of the water plant. He also stressed the fact that steps should be taken to provide training for extra personnel at all plants to provide for replacements and meet emergencies. (Maj. Evans' paper is published complete in the January JOURNAL text.)

The new wartime alum was then discussed. While no one had had experience with it on a plant scale, it was the opinion of those who had tried it on a laboratory scale that it would produce results equal to those of regular alum.

L. R. Howson discussed non-critical materials for services. He advocated a return to lead since it is not on the critical list. Steel has been used successfully in some instances. Payne of Louisville reported the successful use of Fibrex in a small amount as a substitute for jute or oakum. He also stated that he had been using two meters in one vault, thereby saving one line in from the main. L. H. Enslow stated that cement-lined pipe as small as $\frac{3}{4}$-in. is available and should not be overlooked. Clark Cramer stated that this had been used in Lexington, Ky., for a number of years and much of it is still in use there.

(*Continued on page 36*)

AMERICA'S MOST AMAZING PUMP

PEERLESS
HI-LIFT PUMP

Manufactured under R. Moineau's Patents, U. S. 1892217 and 2028607. Canadian Patents 352374. By exclusive license to Robbins & Myers, Inc.

...Unique chrome rotor literally squeezes water uphill.

FOR DEEP WELLS 4" OR LARGER
300 TO 2500 GALLONS PER HOUR
ASK FOR LITERATURE

Also available: turbine and propeller types, to pumps up to 100,000 g.p.m.

PEERLESS PUMP DIV. • Food Machinery Corporation
Factories: Los Angeles, San Jose, Fresno, Calif. and Canton, Ohio

Filter Sand and Gravel

WELL WASHED AND CAREFULLY GRADED TO ANY SPECIFICATION.
PROMPT SHIPMENT IN BULK OR IN BAGS OF 100 LB. EACH.

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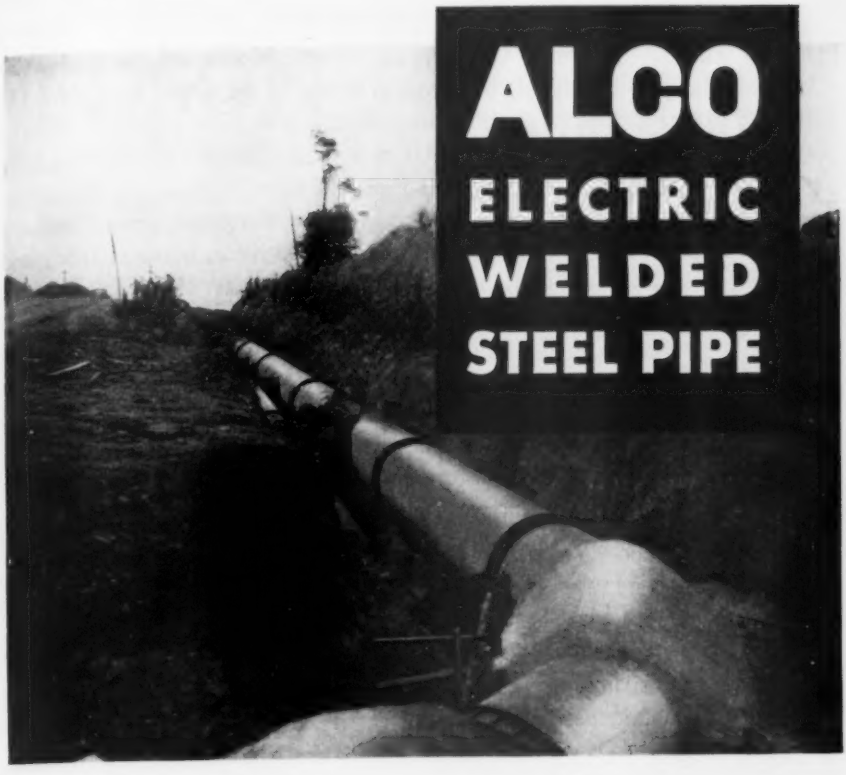

Alco electric welded steel pipe fabricated in accordance with the latest improved methods is highly resistant to sudden shock and rupture. Alco pipe is low in initial cost and designed for long life.

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ALCO PRODUCTS DIVISION
30 CHURCH ST., NEW YORK, N. Y. DUNKIRK, N. Y.

(*Continued from page 34*)

On Tuesday morning, October 20, H. A. Moffat of the Industrial Chemical Sales Div., talked on cleaning filters using sulfur dioxide. He cited the experience in Louisville where 6-mgd. units were cleaned in three days by this method at a cost of $400 each as compared to $1,500 each by hand cleaning. Then followed a discussion of filter bottoms and difficulties of maintaining them. Schmidt reported on the different types of bottoms used at Alcoa, Tenn., where standard cast-iron bottoms, bottoms fabricated of terra cotta and carborundum bottoms, are in use. The non-ferrous bottoms have given the best service.

In his paper "The Effect of Water Waste on Power Consumption" H. E. Beckwith, Pitometer Co., gave figures to show the amount of water wasted through leaks of different sizes in several cities. He emphasized the fact that control of leakage was not only necessary to cut down on power consumption, but also to conserve water. By use of the following formula any operator may figure the power consumption at his plant per million gallons of water pumped and by computing the leakage he can find the power loss:

$$\frac{3.14 \times \text{head in feet}}{\text{deficiency}} = \text{kwh. per 1 mg.}$$

He also gave instructions on the operation of various types of pumping equipment to obtain best efficiency. Bye of Knoxville stated that Knoxville had carried on a routine check of the distribution system for some time keeping two men employed. He said that results obtained more than paid their salaries.

Louis A. Geupel, Supt. of Water Works, Evansville, Ind., spoke on the Mutual Aid program and Civilian Defense program in Indiana. He stated that the Mutual Aid program was designed for use in dire emergency only and depended on full co-operation of water works men. Since voluntary submission of inventories proved to be a failure a committee of ten men was formed, the State divided into zones, and information obtained. Information on inventories was held as confidential and filed with the State Board of Health. A program for in-service training of personnel is planned. Maj. W. W. Towne, U.S. Public Health Service, stated that the maintenance and protection of water supplies was necessary in connection with Civilian Defense and the war effort. The local superintendent and his men should be responsible for their own work during emergencies.

At the Executive Committee meeting it was decided that the Section should support stream pollution legislation which is planned for introduction in the General Assembly of Tennessee during the coming session. A considerable amount of discussion was given to the matter of Civilian Defense activity on the part of the Section. It appears that in both states the Section will have to lead the way if anything is to be accomplished.

(*Continued on page 38*)

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Hand Operated--sizes 2", 2½", 3", 4"
Power Operated--sizes 3" and 4"

Open Discharge or Force Pump
Skid, Truck or Trailer Mounted

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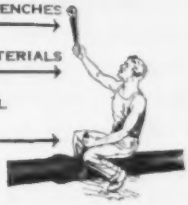

For water supply, fire protection systems, sewage disposal systems, industrial, and irrigation. Flexible.

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You do not need to make your own standards, or wonder whether prepared standards have faded, if you use HELLIGE Glass Color Standards, which are *perpetually guaranteed against fading*. For their long life and reliability they have been the choice of hundreds of water plants.

HELLIGE Comparators, in combination with these standards, are enjoying an increasing popularity because of their durability, compactness and efficiency.

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(*Continued from page 36*)

The afternoon session opened with a paper "Pioneering in the Paducah Water Works" by L. R. Howson of Alvord, Burdick and Howson, Chicago engineering firm. He gave the history of the plant since its construction in 1885 to the present time. Some of the pioneering features mentioned were: One of the earliest installations of concrete filters; the first dry feed chemical machine in a filter plant; three turbine-driven centrifugal pumps installed in 1908; a "cost-fair-return" type of franchise which permitted expansion and maintenance of the system; "the appointment of a woman secretary-treasurer, Miss Lois Sutherland, who is one of the too few feminine members of the A.W.W.A. and one of the Association's most conscientious attendants at all conventions." (Secretary's note: You're modest, "Louie." Miss Lois is a most capable "water works man," meets and solves problems with the best of them, put on a mighty good convention in Paducah, and is a delightful person to know.)

"Water Main Cleaning in the War Effort," prepared by Clinton Inglee, was read by J. R. Brown, Dist. Mgr., National Water Main Cleaning Co. The theme of the A.W.W.A.—Save, Stretch and Share to Win the War—was applied to water mains. He gave statistics on the cost of cleaning mains and the work necessary. The cost of cleaning 6- and 8-in. pipe is

(*Continued on page 40*)

PLAY SAFE!

USE

RUSTOP

The Modern (Cathodic) Method Saves Steel Now In Use. Stops Costly Corrosion At Once. Eliminates Service Interruptions.

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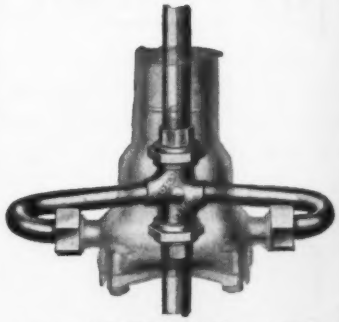

I am the COPPERHORN, out for the duration because of the Copper Conservation Order.—BUT I am the best fitting for a basement water meter setting that has been devised to date. Learn more about me and when you plan on your future meter installations, FORGET ME NOT!

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SOME OF OUR OUTSTANDING EQUIPMENT—

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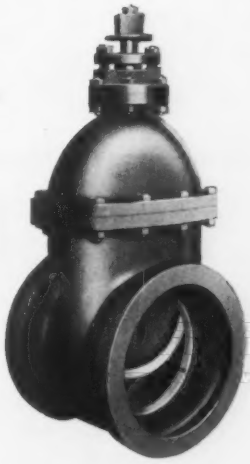

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THE A. P. SMITH MFG. CO.

EAST ORANGE, N. J.

(*Continued from page 38*)

about 12 cents per foot with the city furnishing labor and materials. (This paper was published in the December JOURNAL.) The afternoon session was closed with a talk on "Keeping Water Mains Clean With Calgon" by F. T. Redman, Hall Laboratories.

The annual dinner dance was held during the evening. Election of officers for the coming year was announced as follows: John J. Quinn, Chairman; Clark J. Cramer, Vice-Chairman; B. E. Payne, Trustee; and Howard D. Schmidt, Secretary-Treasurer.

C. M. McCord of Memphis (Tenn.) was chosen for the George W. Fuller Award for 1943. A motion picture of scenes taken at the Chicago convention was shown by H. A. Moffat, Industrial Chemical Sales Co.

The meeting was called to order Wednesday morning by Chairman Quinn. Resolutions were read and a meeting place for 1943 discussed. It was decided that Knoxville, Tenn., would be the host city, but that the Executive Committee should decide when and if the meeting is to be held.

The Paducah Water Works "treated the crowd" to a delightful dinner served at the Kentucky Dam cafeteria. Following this the group visited the dam site where a moving picture of construction operations was shown.

H. D. SCHMIDT
Secretary-Treasurer

(*Continued on page 42*)

HERE IS BUDGET TIME AGAIN!

AND YOUR COMPANY is undoubtedly desirous of having its full share of sales of sewerage and sewage treatment equipment and supplies in 1943.

YOU CAN BE ASSURED thereof by making sufficient provision in your 1943 ADVERTISING BUDGET for space in SEWAGE WORKS JOURNAL including its 1943 CONVENTION NUMBER.

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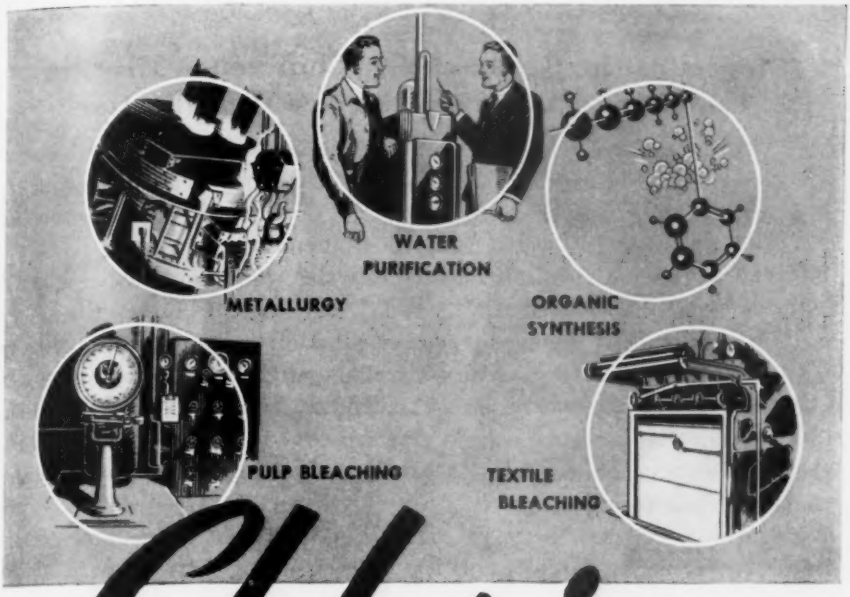

Chlorine

CHEMICAL SERVANT EXTRAORDINARY

In a century and a half of industrial development chlorine has become one of man's most useful chemical servants. Its first commercial application was made in 1799 by Charles Tennant, who manufactured bleaching powder for textile manufacturers.

In 1800 Tennant produced a few tons of bleaching powder. Today chemical plants in America are turning out well over a million tons of chlorine—much of which has been drafted for wartime military and industrial effort.

Penn Salt pioneered in the production of liquid chlorine, being first to manufacture it in commercial quantities. The first tank car of this essential chemical was shipped from our Wyandotte, Michigan, works in 1909. Our operations have continued to expand since that time until today our Wyandotte and Tacoma works are among the largest chlorine producers in the United States.

As a result of our increased production of chlorine for today's wartime uses, we are able to look forward to the promise of even greater peacetime possibilities.

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Pennsylvania Salt Manufacturing Company, 1000 Widener Building, Philadelphia, Pa.
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(*Continued from page 40*)

Report of the Regional War Conference Meeting Under the Auspices of the New York Section

At the request of the officers of the American Water Works Association, in place of the regular Mid-Winter New York Section Meeting, a Regional Meeting was held at the Hotel Commodore on December 30, 1942. There were 250 water works men attending.

The Meeting was entirely devoted to water works problems connected with the war. Abel Wolman, A.W.W.A. President, presented in his usual interesting and intelligent manner some of the problems relating to post-war planning. He gave an over-all picture of the several agencies now approaching post-war planning and of the several aspects from which the problem may be approached. He bore no briefs for particular approaches but strongly appealed to water works men to get busy thinking about post-war planning.

Harry E. Jordan, Secy. of the A.W.W.A., gave the picture of the rules and regulations as to priorities. He cited the slowness with which certain superintendents respond in giving the few data requested in the simple questionnaires from Association headquarters.

Maj. John H. Brewster, San. Engr., U.S. Public Health Service, Second Civilian Defense Region, reviewed civilian defense requirements for water works. Also from the Second Civilian Defense Region, were Francis Keally, Camouflage Specialist, and H. E. D'Andrade, Blackout Specialist. Each gave many details from his special field which may be applied to water works plants.

Earl Devendorf, State Water Supply Co-ordinator for New York, reviewed the water works problems and the steps for their solutions being taken in New York.

Many of the members of the New Jersey Section, as well as from the surrounding states, were in attendance. A General Clinic followed the papers.

At the Trustees' Meeting, preceding the formal meeting, it was decided to hold the Spring Meeting of the New York Section in Syracuse, N.Y., provided that transportation facilities were available.

R. K. BLANCHARD
Secretary-Treasurer

PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

MABBS RAWHIDE PACKING

An Ideal Packing for Water Works and Sewage Pumps and Valves

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NEWS OF THE FIELD

What the future may bring to cities in the United States was recently studied and discussed by Philip M. Hauser, Assistant Director of the Bureau of the Census. Thrown also into the arena of current thought was the President's Executive Order related to the 48-hour week in 32 labor shortage areas. The following cities or areas are listed in the President's order.

Bath, Maine	Hampton Roads (area), Va.	Panama City, Fla.
Bridgeport, Conn.	Washington, D.C.	Pascagoula, Miss.
Hartford, Conn.	Akron, Ohio	Wichita, Kan.
New Britain, Conn.	Dayton, Ohio	Beaumont, Tex.
Portsmouth, N.H.	Detroit, Mich.	Cheyenne, Wyo.
Springfield, Mass.	Manitowoc, Wis.	Ogden, Utah
Waterbury, Conn.	Sterling, Ill.	Las Vegas, Nev.
Buffalo, New York	Brunswick, Ga.	Portland, Ore.
Somerville, N.J.	Charleston, S.C.	San Diego, Calif.
Baltimore, Md.	Macon, Ga.	Seattle, Wash.
Elkton, Md.	Mobile, Ala.	

Those who wish to study in greater detail the War Manpower Commission's outline of present and probable near-future labor shortage areas should obtain a copy of OWI. release PM-4312.

Hauser's data are highly significant to water works executives as well as any other group of persons having to do with city or regional engineering development. A tabulation of his forecast is printed on page 2. It should go into the planning file of every reader of this JOURNAL.

Purely as an exercise in correlation, those of the 32 present critical labor shortage cities that appear in the Hauser tabulation are shown with an asterisk.

This cross checking of the two analyses of municipal conditions shows some very interesting facts. Some of the cities in which the labor shortage is critical at the present time are cities which the Assistant Director of the Census believes have little prospect of post-war population expansion. This might indicate the propriety of little further expansion of purely wartime industries if the peacetime conditions are such as to indicate slow population growth. Several of the cities in which a critical labor shortage exists at the present time are not considered in the census Bureau tabulation. Some of these are adjacent to areas in which postwar population expansion is expected to be substantial. Bath, Me., and Portsmouth, N.H., critical labor shortage areas are not far away from Portland, Me., which

(*Continued on page 2*)

(Continued from page 1)

The Future for U.S. Cities

Forecast by Philip M. Hauser, Asst. Director, Bureau of Census

Class A-1 Areas

(Most rapid wartime growth plus best prospects of retention)

Corpus Christi, Tex.
Dallas, Tex.
Jackson, Miss.
Jacksonville, Fla.
San Antonio, Tex.
San Diego, Calif.*

Class A-2 Areas

(Most rapid wartime growth plus superior chances of retention)

Charleston, S.C.*
Columbia, S.C.
Columbus, Ga.
Mobile, Ala.*
Washington, D.C.*
Galveston, Tex.

Class A-3 Areas

(Above-average wartime growth plus excellent prospects of retention)

Atlanta, Ga.
Austin, Tex.
Beaumont-Port Arthur, Tex.*
Chattanooga, Tenn.
Detroit, Mich.*
Fort Worth, Tex.
Houston, Tex.
Kalamazoo, Mich.
Knoxville, Tenn.
Little Rock, Ark.
Los Angeles, Calif.
New Orleans, La.
Nashville, Tenn.
Sacramento, Calif.
San Francisco, Calif.
Shreveport, La.

Class A-4 Areas

(Above-average wartime growth plus good prospects of retention)

Augusta, Ga.
Baltimore, Md.*
Davenport-Rock Island-Moline (Ia. and Ill.)
Denver, Colo.
Evansville, Ind.
Indianapolis, Ind.
Macon, Ga.*
Norfolk-Portsmouth-Newport News, Va.*
Portland, Me.
Richmond, Va.
Salt Lake City, Utah
Savannah, Ga.
Seattle, Wash.*
Tacoma, Wash.
Wilmington, Del.

Class A-5 Areas

(Above-average wartime growth plus fair prospects of retention)

Canton, Ohio
Chicago, Ill.
Cincinnati, Ohio
Columbus, Ohio
Decatur, Ill.
Fort Wayne, Ind.
Hamilton-Middletown, Ohio
Portland, Ore.*
Pueblo, Colo.
St. Louis, Mo.
Springfield, Ohio

Class B-1 Areas

(Rapid wartime growth after rapid pre-depression growth; chances of retention dependent on ability to convert after the war)

Birmingham, Ala.
Dayton, Ohio*
El Paso, Tex.
Hartford-New Britain, Conn.*
Rockford, Ill.
Tulsa, Okla.
Wichita, Kans.*

Class B-2 Areas

(Boom areas which may or may not be able to convert after the war)

Bridgeport, Conn.*
Johnstown, Pa.
Louisville, Ky.
New Haven, Conn.
Akron, Ohio*
Waco, Tex.

Class C-1 Areas

(Losing population or barely holding their own, but chances of "comeback" excellent)

Amarillo, Tex.
Asheville, N.C.
Binghamton, N.Y.
Charleston, W.Va.
Charlotte, N.C.
Lansing, Mich.
Oklahoma City, Okla.
Peoria, Ill.
Stockton, Calif.
Winston-Salem, N.C.
Miami, Fla.

Class C-2 Areas

(Only slightly lower in rank than Class C-1, above)

Durham, N.C.
Madison, Wis.
Memphis, Tenn.
Phoenix, Ariz.
San Jose, Calif.
Tampa-St. Petersburg, Fla.
Waterloo, Ia.

Class C-3 Areas

(Fair prospects of a "comeback")

Cedar Rapids, Ia.
Des Moines, Ia.
Flint, Mich.
Fresno, Calif.
Huntington-Ashland (W.Va. and Ky.)
Minneapolis-St. Paul, Minn.
New York-Northeastern New Jersey
Roanoke, Va.
Spokane, Wash.
Springfield, Mo.
Topeka, Kan.
Youngstown, Ohio

Class D-1 Areas

(Losing population or growing very little; hard to evaluate)

Atlantic City, N.J.
Cleveland, Ohio
Grand Rapids, Mich.
Kansas City (Mo. and Kan.)
South Bend, Ind.

Class D-2 Areas

(Losing population or growing very little; little prospect of rapid postwar growth)

Allentown-Bethlehem-Easton, Pa.
Buffalo-Niagara, N.Y.*
Erie, Pa.
Harrisburg, Pa.
Omaha-Council Bluffs (Neb. and Ia.)
Philadelphia, Pa.
Providence, R.I.
Springfield-Holyoke, Mass.*
Terre Haute, Ind.
Trenton, N.J.
York, Pa.

Class D-3 Areas

(Losing population with little chance of recouping)

Albany-Schenectady-Troy, N.Y.
Altoona, Pa.
Boston, Mass.
Duluth-Superior (Minn. and Wis.)
Fall River-New Bedford, Mass.
Lancaster, Pa.
Lincoln, Neb.
Manchester, N.H.
Pittsburgh, Pa.
Racine-Kenosha, Wis.
Reading, Pa.
Rochester, N.Y.
Saginaw-Bay City, Mich.
St. Joseph, Mo.
Scranton-Wilkes-Barre, Pa.
Sioux City, Ia.
Springfield, Ill.
Syracuse, N.Y.
Toledo, Ohio
Utica-Rome, N.Y.
Wheeling, W.Va.
Worcester, Mass.

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* Included in the list of 32 present critical labor shortage areas.

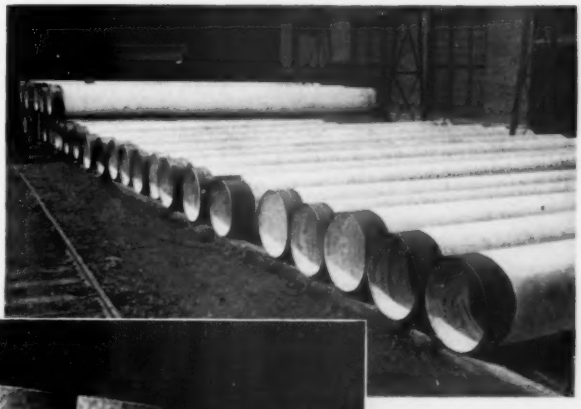
NOTE: Montgomery County, Ala. and Milwaukee, Wis., do not appear above due to unsatisfactory data.

(Continued on page 4)

ALCO

ELECTRIC WELDED STEEL PIPE

PLAIN LENGTHS OR SPECIALS



36" O. D. Piping Ready for Loading.

Special 60" O. D. Header.

Alco Electric Welded Steel Pipe Insures Against Leakage and Breakage

AMERICAN LOCOMOTIVE COMPANY

ALCO PRODUCTS DIVISION

30 CHURCH ST., NEW YORK, N. Y. DUNKIRK, N. Y.

(*Continued from page 2*)

is having an above-average wartime growth and good prospects of retention of the growth after the war. Sterling, Ill., is not far away from the Davenport–Rock Island–Moline group of cities that are regarded by the Census Bureau as having good prospect of retaining the wartime increase in population.

Therefore, in such circumstances, the inter-community relationship and individual community expenditures should be jointly rather than separately considered. There is much material to promote careful thought in the two analyses of municipal conditions.

The Office of Power Director was created by Donald M. Nelson, WPB Chairman, late in January, with J. A. Krug, former Chief of WPB's Power Branch, becoming head of the new Office which has the status of a "claimant agency." This means that Mr. Krug will present to the WPB under the Controlled Materials Plan the requirements of the water and other utility industries. Mr. Krug will be recalled for his speech at the Chicago Conference, a fine speech which was printed and sent in a special War Information Bulletin to all A.W.W.A. members on July 15, 1942.

(*Continued on page 6*)

John H. Fewell, Supt. of Jackson, Miss., water works for the past 40 years, died on January 27 at the age of 80. Mr. Fewell was Supt. of Construction and Operation for Jackson's early private water company. When the city took over, he remained in charge. In 1914, Jackson built a 4-mgd. filter plant and steam pumping station and the city celebrated a "Clear Water Day." George W. Fuller was consultant on the job, with local engineers co-operating.

Recently Jackson suffered the very heavy rainfall of 8.23 in. in 24 hr., causing a dam at the water plant to slide. Mr. Fewell was actively on the job, as was his habit, and, while supervising repairs on the dam, he contracted a severe cold which developed into pneumonia. He had been an Active Member of the A.W.W.A. for the past 17 years.

Baxter F. Wade, who has been Asst. Supt. under Mr. Fewell, will carry on the supervising duties. Wade, a native of Roxboro, N.C., came to Jackson to establish laboratory control for the purification plant and to supervise the construction of additional filter capacities at the plant. He graduated from the University of North Carolina in 1929 and did post graduate work in sanitary engineering at the Public Health Dept. of that University. He has been associated with the Raleigh and the Charlotte, N.C., water works, was a construction engineer for the Federal Resettlement Administration, and, previous to coming to Jackson, was San. Engr. in the Health Dept. of Greensboro.

HYDRO-TITE

AND DRY BRAIDED FIBREX

A DEPENDABLE SELF-CAULKING JOINT COMPOUND FOR CAST IRON BELL AND SPIGOT WATER MAINS

HYDRO-TITE is a self-caulking sulphur base jointing compound used to joint bell and spigot cast iron water mains and soil pipe. It comes in powder form which insures uniformity and quick melting.

When poured into a joint, HYDRO–TITE immediately solidifies upon contact with the metal and bonds to both the surfaces of the bell and the spigot for the entire depth of the joint. It requires no caulking and after pouring a joint, water pressure may be immediately applied.

HYDRO-TITE is easy to use, no skill being required to make joints that are tight from the start. Joints made with HYDRO–TITE will stand any pressure the pipe will stand.

DRY BRAIDED FIBREX

USED LIKE BRAIDED JUTE
WILL NOT BREED BACTERIA

A SANITARY Packing used in jointing bell and spigot pipe for water, sewer mains and soil pipe.

FIBREX was designed for use with Hydro-Tite and other self-caulking compounds, but is entirely suitable also for joints made with lead, and for Sani-Tite and other asphalt sewer joint compounds. Thousands of pounds of Fibrex are already in service on water lines throughout the country.

HYDRAULIC DEVELOPMENT CORPORATION

Main Sales Office: 50 CHURCH STREET, NEW YORK, N. Y.

Works: WEST MEDFORD STATION, BOSTON, MASS.

(*Continued from page 4*)

Edward W. Moore, formerly Assoc. Prof. of Sanitary Chemistry, Harvard Graduate School of Engineering, became a Captain in the Army Sanitary Corps in December. Capt. Moore is Chairman of the A.W.W.A. Committee on Water Conditioning Methods to Inhibit Corrosion. A report of this Committee on "The Value of Sodium Hexametaphosphate in the Control of Difficulties Due to Corrosion in Water Systems" appeared in the JOURNAL for December 1942.

Frank B. Wood, San. Engr. in the U.S. Engineer Dept., was transferred on January 1, from the Vicksburg, Miss., District to the office of the Mississippi River Commission and the Lower Mississippi Valley Div., Vicksburg.

Marshall S. Dutton, Supt. of Water at Oak Park, Ill., has recently been appointed Commissioner of Public Works and Building Commissioner in addition to his other duties. Mr. Dutton entered the Dept. of Public Works in 1924 as Asst. Commissioner of Public Works and in 1937 was put in charge of the Water Dept.

(*Continued on page 8*)

NOTICE:

500 FIFTH AVENUE (corner of 42nd St.) will be the address of the A.W.W.A. after March 6.

The building at 22 East 40th St. (the Association's address for the past five years) has been sold to a large company which plans to occupy the building with its own offices; therefore the A.W.W.A. has sought new quarters.

The Water and Sewage Works Mfrs. Assn, Inc., which was also located at 22 East 40th St., New York, N.Y., has moved to 12 East 41st St., New York, N.Y.

American Water Works Association

New Address: 500 Fifth Avenue, New York

New Telephone: LAckawanna 4-2290

The Pipe of Peace Has Gone To WAR

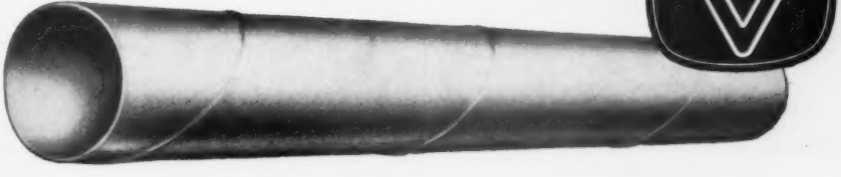
The same ARMCO Spiral Welded Steel Pipe that was the choice of so many engineers for peacetime water supply and force mains is now being used on vital war projects.

Here, of course, it will continue its record for efficient, maintenance-free service. A spun-enamel lining assures high flow capacity, prevents tuberculation and recurrent cleaning troubles. Fifty-foot lengths mean fewer joints, less assembly work. And ARMCO Steel Pipe has an ultimate strength of 50,000 to 60,000 pounds per square inch to guard against shattering and sudden breaks. Sizes range from 6 to 36 inches, with wall thicknesses in any diameter to fit specific jobs.

Remember, if you can't get ARMCO Pipe now for other than the most important war projects, it is because the steel is going into tanks, trucks and ships. After the war ARMCO Steel Pipe will be ready again to meet your every requirement. The American Rolling Mill Co., Pipe Sales Division, 501 Curtis St., Middletown, Ohio.

ARMCO STEEL PIPE

MEETS A.W.W.A. STANDARD SPECIFICATIONS



(*Continued from page 6*)

D. R. Taylor is on leave of absence from his post as Supt. of the city Water Dept., Roanoke, Va., and has taken up a commission as Captain in the Corps of Engineers. He is stationed at Atlanta, Ga., and is Head of the Water Group, Sanitary Unit, Repairs and Utilities Branch of the Fourth Service Command.

A woman in defense is Mrs. Lora E. Reinke, posted at the Neenah, Wis., water works, where she replaces its Chief Chemist, Arthur Hanson, now in service. She began her duties there in October.

Mrs. Reinke majored in chemistry and minored in bacteriology at college, and was then a laboratory technician at the Grandview Hospital, La Crosse, Wis., for two years. Subsequently she acted as assistant to Dr. T. D. Smith in Neenah for five years. She has had no previous experience in water works, but "this is my share of work," she says, "in helping to win the war, and I hope to continue through the duration."

Albert E. Wilson Jr. is now operating a traveling laboratory in his post as Asst. San. Engr., Utilities Branch, Middle Atlantic Div. Corps

(*Continued on page 10*)

METER BOX COVERS

Ford Meter Box Covers are made in a variety of types and sizes for all conditions. Double-lid covers have air-space insulation and sloping skirts which cut down heat loss to a minimum. Single lid covers have overlapping or inset lids and are made in several depths and lid sizes. All Ford Covers have the Lifter Worm Lock and are made to give a lifetime of satisfaction. Write for our catalog of better equipment for water meter setting and testing.

FORD METER BOX CO.,
WABASH, IND.

CORROSION RESISTING
LASTS FOR CENTURIES
ENDS REPLACEMENTS

A lot to expect of the small pipe—but that's what you get for those few *pennies* more per foot you pay for

McWANE 2" CAST IRON PIPE

PRECALKED joints make McWane 2" as easy to lay as any other pipe. No skilled labor. No tedious lead melting and pouring. Sizes 1¼" thru 12".

Immediate Shipments

McWANE CAST IRON PIPE CO.
BIRMINGHAM, ALA.

They Save With

TENNESSEE CORPORATION
Ferri-floc
FERRIC SULPHATE

Dallas, Texas—Water Purification Plant

Mr. L. C. Billings, Superintendent and Chief Chemist of the Municipal Water Purification Plant in Dallas, Texas, conducted extensive tests with FERRI-FLOC as a secondary coagulant to replace alum. As a result of these tests, FERRI-FLOC has been used continuously for over a year.

Although the cost of FERRI-FLOC delivered at Dallas is approximately 10% higher than alum, an over-all savings of more than 30% has been effected. The following data are taken from routine operation reports:

	ALUM	*FERRI-FLOC*
Filtered water turbidity	0.23	0.09
Average bacteria filt. water	11	4
Average water wasted daily	113,495 gals.	16,200 gals.
Average Coag. Fed. gr. gal.	.469	.303
Cost per 1,000,000 gals.	$0.96	$0.68

Congratulations, Mr. Billings, on your contribution towards economy!

Abundant supplies available—no priorities required.

TENNESSEE CORPORATION

ATLANTA, GEORGIA LOCKLAND, OHIO

(*Continued from page 8*)

of Engineers, and his duties are to make water analyses at army posts. He operates from headquarters at Baltimore. Wilson was Asst. Chemist, Div. of Water Supply, Norfolk, Va., from 1935 to 1941, and in 1941–42 was Supt. of Filtration at Fredericksburg, Va.

Philip Goldsmith, formerly a sanitary engineer in the New York City Dept. of Public Works, has been appointed Acting Director of the Sanitary Engineering Research Laboratory at New York University. He replaces Rolf Eliassen, who is now a Captain in the Sanitary Corps and in charge of the sanitation work in the New York area.

Louis J. Kramp, Editor of the *Waterlite News,* the house organ published by the employees of the City Water, Light and Power Dept., Springfield, Ill., has resigned to join the news staff of the Associated Press, and the *Waterlite News* has suspended publication for the duration. The staff of the Department finds it has not the time to devote to this extra work.

Anson B. DeWolf, formerly Mech. Engr. of the Dept. of Water and Sewers, City of Miami, has been granted leave of absence to accept a commission as Captain in the Corp of Engineers, U.S.A. At present he is stationed in the Jacksonville office of the Corps of Engineers.

(*Continued on page 12*)

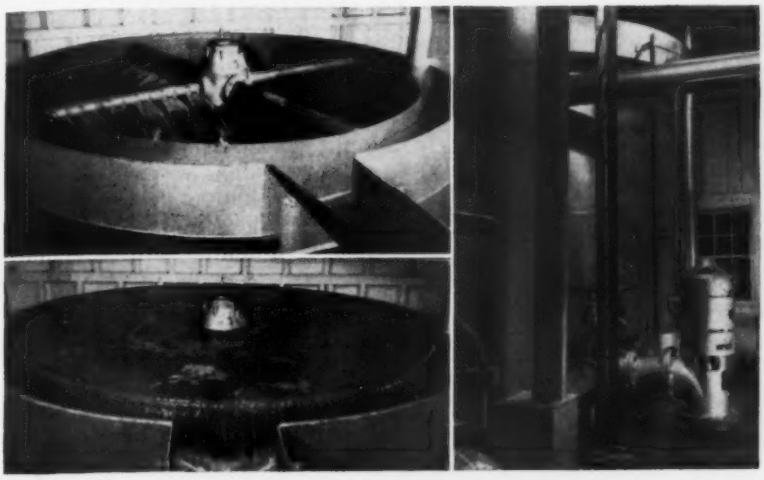
David G. Thompson of the Water Resources Branch of the U.S. Geological Survey died on February 20. He had been ill for several months.

He was born at Lockland, Ohio, in 1888, was graduated from Northwestern University and did post-graduate work at the University of Illinois and at Johns Hopkins University. Before becoming associated with the Geological Survey in 1917, he was an instructor at Lehigh University and at Goucher College, and also served on the Illinois and Maryland geological surveys. He was one of the foremost authorities on development of water supplies from underground sources and had taken a leading part in giving advice for the development of many water supplies for establishments of the War and Navy Departments and war industries.

Mr. Thompson, as co-author with Albert G. Fiedler, received the Goodell Prize in 1939 for the paper "Some Problems Relating to Legal Control of Use of Ground Waters" published in the July 1938 JOURNAL. Mr. Thompson was a member of the Washington Academy of Sciences, the Geological Society of Washington and numerous other societies. He was a member of the A.W.W.A. since 1924.

"American"
FERROFILTER PLANTS

Iron Removal Now Made Economical



Ferrofilter Units at Hartford City, Indiana

FERROFILTERS:-

Remove CO_2 and H_2S.

Oxidize and filter out Iron and Manganese in the same unit.

Do not require subsequent sand filters or chemicals.

Are Backwashable. Runs between backwashing average 2 days—Backwash period 1 minute with a 15 inch rise.

Are more economical to build and simpler to run than any other form of Iron Removal.

(*Continued from page 10*)

Wesley W. Gutteridge of Hackensack, N.J., has been appointed Supt. of the Spring Valley Water Works and Supply Co., to succeed the late Courtland M. Mosier. The Spring Valley Co., which serves the communities from Grand View and Piermont to Spring Valley in Rockland County, N.Y., is a subsidiary of the Hackensack Water Co.

Mr. Gutteridge was born in 1904, trained in civil engineering at Pratt Inst. and the Polytechnic Inst. of Brooklyn, and entered the field of water supply engineering and operation in 1921, when he joined the staff of Nicholas S. Hill Jr., noted water supply engineer, President of the Hackensack Water Co. from 1926 until his death, and President of the A.W.W.A. in 1916.

Under Mr. Hill's direction, Mr. Gutteridge was field engineer on many metropolitan projects, including the filtration plant of the Nyack Water Supply System, well fields at Port Washington, Great South Bay and South Orange and Freeport sewage disposal system. He participated in the planning of the new water system of Albany, and in the appraisals of the New Rochelle, New Haven, Bridgeport, Passaic Consolidated, and Citizens Water Supply systems.

(*Continued on page 14*)

EDSON

DIAPHRAGM PUMPS

Hand Operated--sizes 2", 2½", 3", 4"
Power Operated--sizes 3" and 4"

Open Discharge or Force Pump
Skid, Truck or Trailer Mounted

COMPLETE PUMP OUTFITS

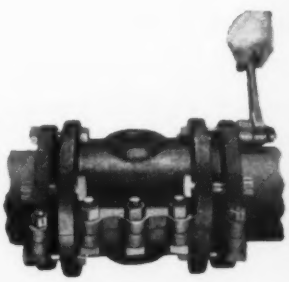
Edson Pumps - Suction Hose
Brass Couplings - Bronze Clamps
Red Seal Diaphragms
Brass Strainer or Foot Valve
Hose Spanners - Adapters - Etc.

***Also*—Brass Hydrant Pumps**

THE EDSON CORPORATION

Main Office and Works: 49 D St., South Boston, Mass.

New York, 142 Ashland Pl., Brooklyn



QUICK - ECONOMICAL - EFFECTIVE

repairs of broken pipe can be made with Doublex Simplex Split Sleeves. Attractively priced. All sizes—2 inches through 36 inches. Makes a good tapping sleeve, too.

AMERICAN CAST IRON PIPE COMPANY

BIRMINGHAM, ALABAMA

Sales Offices in Principal Cities

IMPORTANT

Public Health must be maintained!

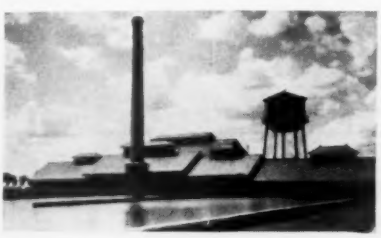
The necessity of maintaining public health in war time is self-evident. Municipal officers in charge of water purification and sewage disposal have a vital responsibility in guarding the nation's health, that should not be underestimated as a contributing factor to final victory.

However, the problems of maintaining public health are *becoming increasingly difficult in the face of material shortages and transportation handicaps.* In order to ease this situation in regard to *Aluminum Sulfate* as much as possible, won't you help us by observing the following simple rules?

1. Order "maximum" cars to conserve transportation space and reduce the haulage necessary to serve your needs.
2. Place your orders as far ahead as you can so that we may schedule our production on an efficient basis.

Why Most American Cities Prefer General Chemical Aluminum Sulfate

General Chemical Aluminum Sulfate is an especially developed "Alum." High quality and constant uniformity have given it *a time-tested* reputation among water works engineers and sewage plant operators.



★ FOR WATER WORKS

1. Makes water crystal clear.
2. Longer filter runs are obtainable.
3. Is economical, used properly will conserve chlorine supplies . . . because it does not require oxidation to make it effective.
4. Superior in tests against other coagulants.
5. High in quality, its constant uniformity can be counted upon.

★ FOR SEWAGE PLANTS

1. Clean, easy to handle and economical to use.
2. Simple application, requires only low cost feeding apparatus and minimum attention.
3. Clear, colorless effluents are possible.
4. Precipitated sludge digests readily.
5. Treated digested sludge dries quickly, without odor.

GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK, N. Y.

Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh Providence (R. I.) • St. Louis • Utica (N. Y.)

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In Canada: The Nichols Chemical Co., Ltd. • Montreal • Toronto • Vancouver

(*Continued from page 12*)

In 1937 Mr. Gutteridge became a member of the engineering staff of the Hackensack Water Co. and for the past four years has served as Asst. Hydraulic Engr. He has been identified with practically every important construction project carried out by the Hackensack Co. in recent years.

Amos J. Alter, San. Engr. of the Indiana State Board of Health, Indianapolis, has been commissioned Asst. San. Engr. in the U.S. Public Health Service Reserve and assigned to the headquarters of the OCD Medical Div. in Washington, as a member of the Sanitary Engineering Section.

The winners of the 1942 Membership Promotion Award are W. H. Booker, State San. Engr. of North Carolina, and A. E. Berry, Director of the Ontario Dept. of Health San. Eng. Div. and Secretary of the Canadian Section. The prizes were given to the two active or junior members who brought in the largest membership during 1942. Calculations were weighted, so that the higher the dues paid by the new member, the higher the credit to the contestant, on the basis that classifications such as corporate members are more difficult to obtain.

(*Continued on page 16*)

AMERICAN WATER WORKS ASSOCIATION

Conference on Wartime Water Works Problems

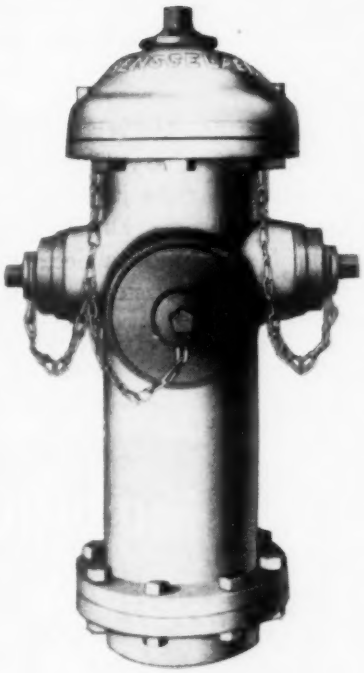
Cleveland - June 15-18, 1943

MAKE RESERVATIONS NOW BY WRITING DIRECTLY TO:

CARTER HOTEL	*or*	STATLER HOTEL
$3.00, 3.50, 4.00, 4.50	*Single Rooms*	$3.00, 3.50, 4.00, 4.50, 5.00, 6.00
$5.00, 5.50, 6.00, 6.50	*Double Rooms (for two)*	$5.00, 5.50, 6.50, 7.00, 8.00
$6.00, 7.00, 8.00	*Twin Bedrooms (for two)*	$5.00, 5.50, 6.00, 6.50, 7.00, 7.50, 8.00
From 12 to 20 available (*describe by letter*)	*Suites*	From 10 to 15 available (*describe by letter*)

FOR BEST RESERVATIONS, WRITE NOW—
AND REFER SPECIFICALLY AND CLEARLY TO THE ABOVE SCHEDULE

RENSSELAER
Defender FIRE HYDRANT



An old friend takes on new beauty and still retains its THREE FIRSTS*

*1—First in ease of operation

2—First in ease of servicing

3—First in dependability

★

American Water Works Association

STANDARD SPECIFICATIONS

★

RENSSELAER VALVE CO., TROY, N.Y.

BRANCH OFFICES

ATLANTA, GA.
Rhodes-Haverty Building

CHICAGO, ILL.
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1252 First Avenue, South

DIRECT REPRESENTATIVES

HEMPSTEAD, N. Y., 62 Patterson Avenue
(Mr. J. E. Williamson)

YONKERS, N. Y., 14 Caryl Avenue
(Mr. R. W. Turner)

ROCHESTER, N. Y., 131 Hurstbourne Road
(Mr. J. S. Ten Eyck)

OKLAHOMA CITY, OKLA., 202 W. Grand Ave.
(Mr. E. J. Connelly)

(*Continued from page 14*)

Mr. Booker, who received the first prize of a $100 War Savings Bond, personally and by correspondence, carried on a vigorous campaign to bring members into the Association. His interest has been particularly directed toward the establishment of corporate membership in the municipalities of North Carolina. Seventeen such memberships were obtained by him during the year. He was also responsible for the obtaining of 9 active memberships—all fully paid.

Dr. Berry, winner of $25 in cash, personally endorsed the applications of 13 active members and two corporate members—all fully paid. Dr. Berry's continued promotion of the A.W.W.A. is fittingly recognized by this award.

Dr. Herman G. Baity, Prof. of San. Eng., University of North Carolina, has been appointed assistant to the Sanitary Engineer of the Brazilian Government. His work will come under the jurisdiction of the Office of the Co-ordinator for Inter-American Affairs. Dr. Baity was the 1940 winner of the Fuller Award for the North Carolina Section.

Taking his place at the University will be Dr. Brewster Snow, who has taught previously at Duke and at Harvard.

(*Continued on page 18*)

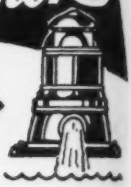
With the coming of '43 we enter our eighty-sixth business year. A long life of business integrity and top quality products . . . a pledge of absolute reliance upon the KUPFERLE mark . . . unfailing service under all conditions of every Kupferle Fire Hydrant.

JOHN C. KUPFERLE FOUNDRY CO., ST. LOUIS

1857 1943

KUPFERLE FIRE HYDRANTS

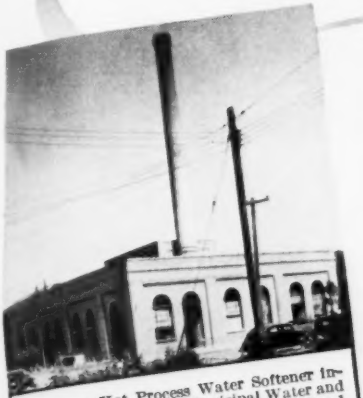
Serving Cities Everywhere



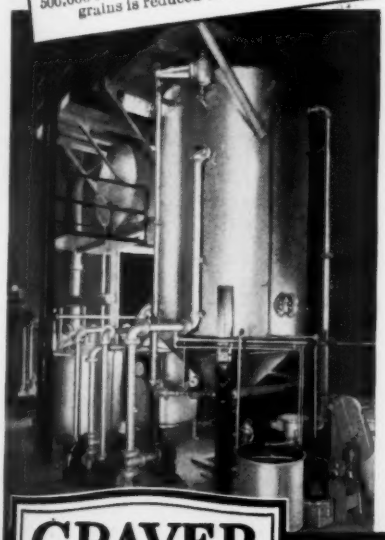
There are more Layne Wells and Pumps serving cities throughout the world than any other kind made. Layne Wells and Pumps are known as the most efficient ever built. They last longer and in upkeep cost have an amazingly fine record. They seldom need repairs of any nature. Write for latest catalogs, bulletins, folders, etc. No obligation. LAYNE & BOWLER, INC., Memphis, Tenn.

LAYNE WELLS & PUMPS

No trace of scale or corrosion after *14 MONTHS USE!*



A Graver Hot Process Water Softener installed in a Minnesota Municipal Water and Light Plant softens boiler feed water for 1 Riley and 3 Kidwell 250 H.P. water tube boilers. Operating at 400 lbs. pressure they generate 300,000 lbs. of steam in summer and 500,000 lbs. in winter. Hardness of 11 to 22 grains is reduced to .4 of a grain.



UP IN MINNESOTA, a Municipal Water and Light Plant* installed a Graver Hot Process Water Softener to treat their boiler feed-water. Their boilers supply steam to drive the turbines which generate power for the city lights and steam to heat the business district of the town. And they are the source of power for the pumps which supply the city water.

The exacting demands on this boiler plant are continuous. Nevertheless, a thorough examination of the boilers after 14 months of use revealed that there was *no trace of scale or corrosion in the system.*

Briefly, Here Are The Facts

- **Water supply tests 11 grains hardness in Summer and 22 grains in Winter.**
- **Graver Hot Process Water Softener reduces this to approximately .4 of a grain the year around.**
- **There is no trace of scale or corrosion.**
- **Water treating costs materially reduced.**

This is just another example of the efficiency and economy of the Graver Hot Process Water Softener, and it is typical of the service this equipment is delivering in hundreds of plants all over the country.

If you have a specific water conditioning problem, consult Graver. There's no obligation.

You'll Want This Bulletin

Our new bulletin, No. 314, gives complete details about Graver Hot Process Water Softeners and includes flow charts, tables, and other valuable data. Write for your copy today.

GRAVER TANK & MFG. CO., INC.
4809-45 Tod Avenue, East Chicago, Ind.
NEW YORK CATASAUQUA, PA. CHICAGO TULSA

*Name on request

GRAVER HOT PROCESS WATER SOFTENERS

Simplex Air Release Valves Automatically Vent Air Accumulations

The Simplex Automatic Air Release Valve is of simple, dependable construction, having but one lever movement which operates a needle valve so designed as to be always tight seating. The valve is operated by a heavy thickness glass ball float, tested to several times the service working pressure. A cast iron shell houses the actuating parts which are of corrosion resisting materials.

Standard Simplex Air Release Valve is for working pressures up to 250 lbs. per square inch. The Type "ARA" valve is similar in design but operates up to 1250 lbs. per square inch. Simplex Air Release Valves are being used extensively on lines and pumps for the release of air in water and sewage lines, oil and gasoline lines, and for industrial process liquids.

Write today for further information on the Simplex Air Release Valve—the automatic watchdog to assure continuous peak flow.

SIMPLEX VALVE & METER COMPANY
6784 Upland Street • Philadelphia, Pa.

(*Continued from page 16*)

W. A. Oeffler

W. A. Oeffler is the man who is making water works public relations work in Jasonville, Ind., according to the letter from Jasonville's Mayor, which we have kept carefully on file. Oeffler has been Supt. of Jasonville's water plant for the past 18 years. Previously, he was foreman on sanitary sewer construction, foreman on street paving construction, and cost clerk on railroad construction. Since 1933 he has been Co-ordinator of all city projects and since the inception of the Mutual Aid Program he has been Zone Co-ordinator of Zones 15 and 16 in Indiana.

(*Continued on page 19*)

Bring in a New Member

HELP PROMOTE YOUR ASSOCIATION BY INTERESTING YOUR FRIENDS AND CO-WORKERS IN IT.

Send for application blank

American Water Works Assn.
22 East 40th Street, New York

(Continued from page 18)

COUNCILMEN
NEWTON HADLEY
HERMAN CRISS
JOE GREENWOOD
HENRY BAUGH
ARTHUR DUANE

City of Jasonville
MAYOR, W. H. SLOUGH
JASONVILLE, INDIANA

CLERK-TREASURER
BRUCE KETCHEM
CITY ATTORNEY
OSCAR R. SHIELDS
CHIEF OF POLICE
FRED GRIFFITH
CHIEF OF FIRE DEPARTMENT
FRANK TRIBBY

September 19, 1942.

Mr. Harry E. Jordan, Secy,
A.W.W.A.
22 East 40th Street,
New York, N.Y.

Dear Sir:

For many years the Water Works industry has been the unromantic portion of public service and as an industry has not been glamorized and its purpose and functions in community life were taken for granted.

Its personnel were unheard of except when changes were made--for political reasons mainly.

All of the foregoing statements freshened themselves in my mind when I learned of a statement made by a past chairman of the Indiana Section at the last annual convention at Purdue University, in which he said in part, "Water works people were unseen, working in unseen places." This is true in the vast majority of places but we can point with pride to a record of Water Works personnel, which we believe to be unequaled elsewhere.

The superintendent of our Water Department, W.A. Oeffler, is now serving his fourth year as President of the Jasonville Industrial Bureau, which is the Business and Professional men's organization here. The secretary-cashier, Mrs. Anna C. Apple, is now president of the Business and Professional Women's club of our city. Thus you see it is that our Water Works people are not unheard and unseen but rather have taken their rightful places in our community activities.

My past experiences lead me to believe that the Water Works industry can be made romantic and the public conscious of this utility, but this can be accomplished only by the people directly responsible for this continuity of service.

Yours very truly,
W. H. Slough
W. H. Slough, Mayor

(Continued on page 20)

(*Continued from page 19*)

Edward E. Minor, Vice-Pres. of the New Haven Water Co. is the new Associate Water Co-ordinator of the Connecticut Defense Council. He succeeds G. E. Lourie, Supt., Bristol Water Dept.

George H. Ferguson, Chief San. Engr., Canadian Dept. of Pensions and National Health, Ottawa, has been made Chairman of the Ottawa branch of the Engineering Inst. of Canada.

Wendell R. LaDue, Chief Engr. and Supt. of the Akron, Ohio, Bureau of Water and Sewerage, is the new Pres. of the Akron District, Society of Professional Engineers. Mr. LaDue was the 1939 winner of the Fuller Award from the Ohio Section, and a Director on the A.W.W.A. Board, 1940–42.

"Ion Exchangers for Industrial Processes" is a brief and interesting statement covering the field of application of various "exchange" materials, as applied to fields other than the water conditioning field. This booklet, issued by the Permutit Company, 330 West 42nd St., New York, N.Y., marks a new departure for that company after nearly thirty years' experience with ion exchangers in the water works field.

(*Continued on page 22*)

DIFCO

Presumptive and Confirmatory Media for Detection of Coliform Bacteria

This group of Dehydrated Culture Media, Difco, is prepared expressly for the detection and confirmation of coliform bacteria in water. Each medium conforms to the requirements of "Standard Methods of Water Analysis" of APHA-AWWA in ingredients, formula and reaction. Results obtained by the use of these standardized media are reliable and comparable.

Bacto-Lactose Broth
Bacto-Brilliant Green Bile 2%
Bacto-Crystal Violet Lactose Broth
Bacto-Formate Ricinoleate Broth
Bacto-Fuchsin Lactose Broth
Bacto-Endo Agar
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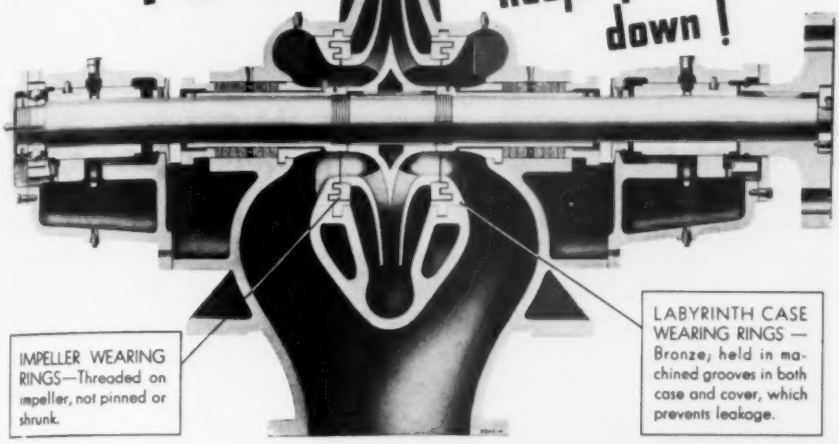
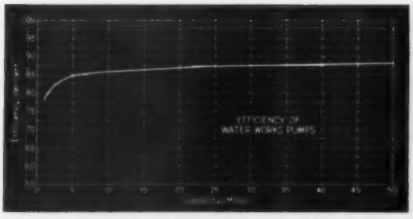
Specify "DIFCO"
THE TRADE NAME OF THE PIONEERS
In the Research and Development of Bacto-Peptone and Dehydrated Culture Media

DIFCO LABORATORIES
INCORPORATED
DETROIT, MICHIGAN, U. S. A.

Sustained PUMP EFFICIENCY keeps power costs down!


IMPELLER WEARING RINGS—Threaded on impeller, not pinned or shrunk.
LABYRINTH CASE WEARING RINGS — Bronze, held in machined grooves in both case and cover, which prevents leakage.

Initial high pump efficiency is sometimes obtained by the use of excessively close clearances between wearing rings, but, attained in this way, it is not long maintained, particularly where flat rings are relied upon.



Efficiencies attainable with various capacities at heads between 125 and 225 ft.

DE LAVAL LABYRINTH WEARING RINGS are distinct because, without resort to close clearances, they make possible high pump efficiency, which is maintained over a long interval, as demonstrated, for instance, by two 25 m. g. d. De Laval pumps in the Shawmont Station, Philadelphia.

Unit No. 4 in the acceptance test on January 22, 1927, showed a wire-to-water efficiency of 82.7 per cent and, when tested again on January 20, 1933, an efficiency of 83.9 per cent. Similarly, Unit No. 5 on the acceptance test on March 3, 1927 showed 83.3 per cent efficiency and, when tested again on January 31, 1933, it showed 83.9 per cent.

For further particulars and other instances, ask for Publication P-3225.

DE LAVAL *Steam Turbine Co.*
TRENTON, N.J.
MANUFACTURERS OF TURBINES . . . STEAM, HYDRAULIC, PUMPS . . . CENTRIFUGAL, PROPELLER, ROTARY, DISPLACEMENT, MOTOR-MOUNTED, MIXED-FLOW, CLOGLESS, SELF-PRIMING, CENTRIFUGAL BLOWERS and COMPRESSORS, GEARS . . . WORM, HELICAL, and SILENCING COUPLINGS

(*Continued from page 20*)

"Water Treatment With Limestone" is Bull. No. 65, available at no charge, upon request to the Texas Engineering Experiment Station, A. & M. College of Texas, College Station, Texas. The bulletin is abstracted as follows:

A wide variety of limestones from pure calcium carbonate to almost pure magnesium carbonate were collected from Texas quarries. Preparation of the samples included crushing and screening and chemical and microscopic analyses. Powdered limestone was fed into water containing known amounts of iron and carbon dioxide, to determine the amount of removal. The effect of calcining the rock and the water treated was also investigated thoroughly. Water was passed through filters of crushed limestone to determine the effect of size, rate of flow, physical and chemical properties of the limestone upon removals of carbon dioxide, iron and manganese. These laboratory studies were substantiated by semi-plant scale studies at Crockett and Caldwell. The results indicated that suitable powdered limestones may be applied by dry feed to rapid sand filter plants for correction of corrosion. For new plants, filters of crushed limestone are operated with greater ease and economy.

(*Continued on page 32*)

PERFECT WASH WATER DISTRIBUTION WITH WAGNER UNDERDRAINS

The patented design of concrete Wagner underdrain blocks assures perfect wash water distribution and equally efficient collection of filtered water.

Wash water discharges from protected orifices and its pressure is instantly dissipated against the filter floor. Any differences in pressure are immediately averaged. Thus, a uniformly gentle upward flow washes filters clean without carrying away sand.

Gravity filters equipped with Wagner underdrains have been tested by the nation's leading engineers and have been found to be more efficient than conventional types of filters.

INFILCO INCORPORATED

FORMERLY INTERNATIONAL FILTER CO.
325 W. 25TH PLACE, CHICAGO, ILL.

WHAT'S THE MATTER WITH THE HEATER?

HOUSEWIFE: "Why do water heater coils clog up so fast? Can't something be done about the water?"

PLUMBER: "I don't know, lady, I've been fixing water heaters for 25 years, and they all scale up."

THE ANSWER: Yes, something can be done about the water. A simple treatment with Calgon will stop scale formation in water heaters.

THE war has already caused an acute scarcity of metals for heater coils. Soon your customers may find them impossible to get. You can solve this problem economically for the whole community and gain the good will of your customers.

The small amount of Calgon needed to accomplish this result is well within the budget of city water departments. No increase in water rates has been necessary in the hundreds of cities where Calgon is being used.

Calgon* is not a new and untried product, but has been thoroughly proved in hundreds of different cities having widely varying types of water. It not only prevents scale in water heaters but, used after lime-soda softening, Calgon prevents after-precipitation and cementation of filter sands. Mains are kept open so that they will deliver their full capacity.

Samples and complete instructions for tests will be sent on request.

Calgon is the registered trade-mark of Calgon, Inc. for its glassy sodium phosphate products.

SCALED UP HEATER COILS *and calcium carbonate deposits in pipe lines can be made a thing of the past by a treatment of 0.5 to 2 ppm. Calgon. The cost of this treatment is extremely low.*

Calgon solves 4 water works problems

1. **Prevention of scale** from hard, high-bicarbonate waters. Calgon, added at the plant, prevents scale formation in mains, meters and hot-water heaters, throughout the system.

2. **Corrosion control**—Calgon forms a thin protective film on metals and metal oxides at pH values of 5.0 and higher. This reduces the attack of oxygen to such an extent that corrosion ceases to be a problem.

3. **Prevention of "red water"** — Calgon prevents the precipitation of dissolved iron. Thus "red water," either from iron initially present in well water, or from corrosion, can be eliminated.

4. **Stabilization of water** following lime or lime-soda softening. Calgon's ability to prevent precipitation of calcium carbonate stabilizes water to the ends of the system.

HAGAN HALL BUROMIN CALGON

calgon, inc.

A SUBSIDIARY OF HAGAN CORPORATION

HAGAN BUILDING PITTSBURGH, PA.

(*Continued from page 22*)

Report of Florida Section Meeting

The Sixteenth Annual Meeting of the Florida Section was officially opened on November 12 by an address of welcome by the Honorable C. H. Reeder, Mayor of the City of Miami, where the meeting was held. Planned as a "War Conference" by the program committee, it proved to be that in every sense of the word, since practically all of the sixteen papers presented dealt either directly or indirectly with some phase of water supply or treatment as affected by the war effort. Section officials were highly gratified at the large attendance of commissioned officers of both the Army and Navy, three of whom presented papers during the meeting.

Maj. D. W. Evans, Regional Sanitary Engineer of the O.C.D. presented the first paper, taking for his subject "Maintenance of Public Water Supplies for Civilian Defense." (Maj. Evans's paper is given in full in the January 1943 JOURNAL.)

One of the most interesting papers was that of Captain T. B. Jenson of the U.S. Engineer Office, Jacksonville, Fla. Taking for his subject "Water and Sewerage Installations at Army Bases in Florida," he held the closest attention of the group with his description, necessarily restricted by military censorship, of the part Army Engineers are playing in the tremendous program of military construction either already completed or still under way in Florida. The hope was expressed that the program of water and sewage treatment being placed in operation in these Bases may serve as the stimulus to many Florida cities to undertake similar steps when the war has been won and new construction again becomes possible.

As in past years, the State Geological Survey and U.S. Geological Survey made important contributions to the program. Their discussions included papers on "The Importance of Water Resources Data to the War Effort," "Well Construction Problems and Methods" and "Groundwater Investigations in Florida." Authors and their respective titles will be

(*Continued on page 34*)

ZECO GREENSAND ZEOLITE

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(*Continued from page 32*)

found in the complete program of the meeting, which appears on p. 1938 of the December 1942 JOURNAL.

The highlight of the meeting was the address of President Abel Wolman, delivered Friday afternoon, on "The Place of Public Water Supply in the War Effort." He stated that the most important problems now being faced by the water works industry could be summarized under four heads which he designated as: the question of manpower, the question of critical materials, the problem of critical water areas, and, finally, the absolute necessity of preparing for even more critical conditions and shortages which must certainly lie ahead. His keen and critical analysis of each of these problems was closely and appreciatively followed by the group and a number of questions were asked and answered following his address.

Under the able direction of C. F. Wertz, Executive Chairman of Local Entertainment and Arrangements Committees, assisted by W. A. Glass, Director of the Dept. of Water and Sewers of the City of Miami and H. H. Hyman, present Director of the Section, an outstanding program of recreation and entertainment was provided. It included a cocktail party on Thursday night, mid-day luncheon on Friday, followed by a Golf Tourna-

(*Continued on page 36*)

Vogt Fire Hydrants

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"Traffic Model"—
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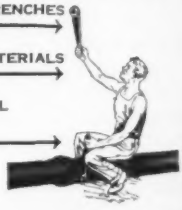

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Thousands of hospital patients endangered

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saved the day!

A TRUNK SEWER was under construction across the property of a large hospital taking care of thousands of patients. To facilitate the work one of the supply lines from the hospital's private water supply was temporarily opened.

Later, while driving steel shoring, the contractor pierced a cast iron sewer line lying a short distance from the opened water line. There was no flow from the sewer line and it was presumed to be dead.

However, the next morning seepage was discovered at the hospital water stations. Investigation showed that the cast iron line carried sewage intermittently—and it had contaminated the water supply!

Portable hypochlorite feeders were rushed from the filtration plant and connected at the pumping stations of the hospital. Per*chloro*n was fed at a very high rate throughout the night and after high residuals were obtained at every spigot and extremity, the water was passed as safe for consumption.

The hospital reported no illness that might have resulted from sewage pollution. The prompt use of Per*chloro*n removed the threat of disease and quickly made the system safe.

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Because large quantities of Per*chloro*n are in urgent demand for current army and navy use, we ask our old customers to cooperate with us by ordering Per*chloro*n only for their usual immediate needs—*well in advance!* Today's conditions present many unusual problems—if you want technical assistance, get in touch with a Penn Salt representative . . . Send today for your *free* copy of a valuable data book on the use of Per*chloro*n. Pennsylvania Salt Manufacturing Company, 1000 Widener Building, Philadelphia, Pa. Branch Offices: New York • Chicago • St. Louis • Pittsburgh • Wyandotte • Tacoma.

PENN SALT *Chemicals*

(*Continued from page 34*)

ment in the afternoon and the annual banquet and dance on Friday night at the beautiful Coral Gables Country Club.

The Friday program was unique in the experience of the Section, the entire group being carried several miles up-river to the Miami Treatment Plant in Hialeah on the excursion boat "BISCAYNE." The morning program, which included a trip of inspection of the treatment plant, was held in the plant and the afternoon program in the main lounge of the Miami Springs Golf Club. The return trip by the same boat was made late in the afternoon. The trip afforded an excellent opportunity to see some of the numerous Navy activities being carried on along the Miami waterfront.

Visiting wives and daughters were pleasingly entertained by a Ladies Committee composed of wives of Section and water department officials.

J. R. Hoy, Past Secretary, and at the time of the meeting Vice-chairman of the Section, was designated for the Fuller Award for outstanding service to the Section. The announcement was made by Secretary A. P. Black at the annual banquet Friday night, following an address by Dr. Wolman on the life, character and work of George W. Fuller, for whom

(*Continued on page 38*)

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CLEANS OLD TANKS and KEEPS NEW TANKS CLEAN
Protects Clarifiers, Filters, etc.
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THE CATHODIC SYSTEM OF CORROSION PREVENTION

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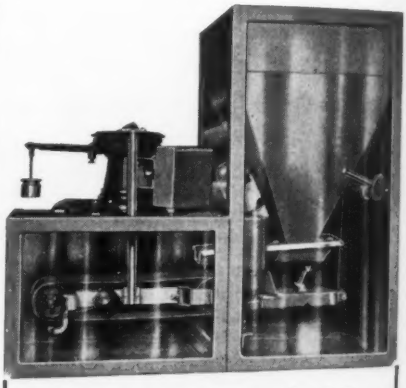

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In our laboratory—the most complete ever assembled solely for ozone research—our staff of bacteriologists, chemists, and physicists are continuously at work.

As theories are verified, new applications thoroughly explored and proved, they are filed for postwar application—our contribution to the better world America is fighting for.

We solicit correspondence from those members of the water works industry who are interested in a better and simpler way to solve their taste, odor, and color removal problems.

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(*Continued from page 36*)

the award is named. Dr. Black also made formal presentation of last year's award to W. B. Gibson of Fort Myers, retiring Chairman of the Section, who was unable to make the trip to Chicago and receive it there.

The complete list of officers for the Section for 1942–43 is given on p. iv at the front of this JOURNAL.

C. F. Wertz, Resident Engr., Dept. of Water and Sewers, City of Miami, was appointed Chairman of the Membership Committee.

Attendance at the morning and afternoon sessions was by far the best in the history of the Section, at least 90 per cent of the entire registration being present at every session, which was something distinctly unique in the experience of the Section. The attitude everywhere in evidence was that only a serious and thoughtful consideration of mutual problems would serve to justify such a meeting in times such as the present. The meeting adjourned at noon on Saturday, November 14, with the feeling expressed by many that it was one of the best and strongest in the sixteen years during which the Section has functioned.

A. P. BLACK
Secretary

(*Continued on page 40*)

WATER REFINING EQUIPMENT HEADQUARTERS
INDUSTRIAL—PROCESS
RAILROAD—MUNICIPAL—HOUSEHOLD

FILTERS Of All Types *and* Capacities . . . Gravity . . . Pressure

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All Types *and* Capacities—Zeolites (*synthetic and natural*) and Lime and Soda

CHEMICAL FEEDERS (wet or dry)
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Of Iron . . . Taste . . . Odors . . . Colors . . . Suspended Matter

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America's largest selling pumps—for all services in all industries . . .
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all forms of drive—
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Manufactured in Sizes 2" to 96"—
A large stock constantly on hand,
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PHILLIPSBURG, N. J.
EVERETT, MASS.

(*Continued from page 38*)

The Los Angeles Dept. of Water and Power is finding an old policy newly popular. Under a salvage plan that has been in effect for many years, all used materials and equipment are carefully examined for one of three possible actions: to be reclaimed for further use, where practicable; to be converted to new uses; to be sold as scrap where unfit for any further Department need. In one month, the Department poured into the nation's scrapheap: 90,000 lb. of copper, 510,000 lb. of steel and iron, 16,000 lb. of brass, 70,000 lb. of lead, and 104,000 lb. of miscellaneous other materials.

Much ingenuity has been exercised by the staff technicians in reclaiming or converting used items. For example, stub ends of small diameter pipe are made into nipples; broken truck springs are forged into special tools; short lengths of large pipe sections have ends welded on and become tanks; stay bolts are re-threaded. The work is done in the Department's own shops.

Visitor's register books and truck register books, composed of 48 double pages, $8\frac{1}{2} \times 11$ in., of 24-lb. ledger paper, are available at $2.00 each, plus $0.15 postage, from Unz & Co., 24 Beaver St., New York, N.Y.

(*Continued on page 42*)

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RUSTA-RESTOR TRADE MARK REGISTERED

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RUST IN STEEL TANKS

Rusta Restor is the positive method of preventing rust in all types of steel tanks and riser pipes (the electrical method)

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A complete line of water meters of every type is manufactured by Worthington-Gamon Meter Company, a subsidiary of Worthington Pump and Machinery Corporation.

WORTHINGTON PUMP AND MACHINERY CORPORATION
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IC3-10

(*Continued from page 40*)

The American Arbitration Assn. announces a revised edition of its Voluntary Labor Arbitration Rules of Procedure, to meet war regulations and conditions. The Rules are accompanied by a Manual for Using the Rules, covering such important subjects as: Panels of Arbitrators; Summary of Procedure With Respect to Parties, Arbitrators and the Association; Institution of Proceedings; Appointment of Arbitrators; Hearings and Awards. A special section on the arbitration of wage disputes is included, which contains procedure for the reference of wage decisions to the National War Labor Board for review and directions for expediting proceedings under its Rules, in relation to policies set forth by the War Labor Board.

A complete index enables those using the Rules and Manual to find immediately the pertinent rule or instruction needed in a proceeding. The Rules have been formulated by the joint effort of management and labor, and have the benefit of the experience of the American Arbitration Assn. in more than a thousand labor arbitrations. Corporation officials, attorneys, and union leaders make use of them.

The Rules and Manual are available upon request to the American Arbitration Assn., 9 Rockefeller Plaza, New York.

The 1943 Municipal Year Book, which will be published early in May, will contain for the first time charts and graphs showing trends in finances, utility rates, employees and payrolls, cost-of-living, motor vehicle deaths, library circulation, mortality rates, school attendance, public works construction, crime rates, fire losses, municipal debt, etc. New locally collected revenues and increases in rate of old sources of revenue are discussed in detail with regard to the rate, source, and estimated revenue. In addition, the Year Book gives an analysis of changes in tax rates and in assessed valuations for the current fiscal year as compared with the preceding fiscal year.

(*Continued on page 46*)

Not a total interruption of service since 1903 was the record of Elmer J. Bogue, former Chief Engr. of the Marion, Ind., City Water Works, who died on January 27. He retired in September 1942, due to ill health, after having served since May 1886. When he started working, there were but two men in the engine room, one at night and the other during the daytime. He had the 12-hour night trick for several years, but in 1900 became the Chief, and assumed the regular trick at the same time. Up until his retirement he not only took his daily turn of duty, but kept up all of the maintenance with the help of one assistant. He did most of the pump packing himself, and looked after the purchasing of engine room supplies, considering it more or less of a disgrace to ask anyone to serve for him.

gn means that the weights nd thicknesses of cast iron ipe are *scientifically designed r specific laying conditions.* o more risk of under-guess- g. No more over-guessing to safe. You get the proper ickness for the service re- uired.

Our members will of course ontinue to manufacture cast on pipe in accordance with previously established specifications—A.W.W.A.—A.G.A.—Federal Government W W—P—421. But it will be obvious that the new factors in cast iron pipe design can save thousands of tons of metal with resultant large economies to pipe users.

Thus, cast iron pipe keeps in step with American Industry's swift wartime progress in design and production. Known for *longest life* by official records—proved to be *lowest in maintenance cost* by a nation-wide survey—*salvaged or re-used* by hundreds of cities—it is now scientifically designed for specific laying conditions. And it is more economical than ever. Cast Iron Pipe Research Association, Thomas F. Wolfe, Engineer, Peoples Gas Bldg., Chicago.

CAST IRON PIPE
RESEARCH ASSOCIATION, CHICAGO
NO. 1 TAX SAVER

(*Continued from page 42*)

Other important features in the new edition are: lists of substitute materials and supplies cities are using in place of critical materials no longer available, extent to which these substitutes are proving satisfactory in use, and the municipal activities curtailed in order to save critical materials; descriptions of local defense activities; exposition of personnel policies, position-classification and pay plans, number of hours in regular municipal work week, extent and form of compensation for overtime work, retirement plans adopted in the last two years, and directory of chief personnel officers; police and fire data, including personnel turnover, defense activities, etc.; and public housing data, including information on war housing.

As many municipal officials already know, the Municipal Year Book indexes data on cities of the United States, including the 2,042 cities with populations under 5,000. Maps, assessed valuations, forms of government, utilities, elections, personnel, annual municipal reports, civil service, elective officials, and many other topics are covered.

The Municipal Year Book 1943 is published at 1313 East 60th St., Chicago, at the pre-publication price of $7.50. After publication the price will be $1.00 more.

U.S. Pipe & Fdry Co. has been reported as the purchaser at the price of $4,300,000 of the voting control (54,500 shares or 43 per cent) of Sloss-Sheffield Steel & Iron Co., one of the large U.S. producers of pig iron. The report comes from *Time* magazine for January 11, 1943, showing a photo of Norman F. S. Russell, President of U.S. Pipe & Fdry Co. and a long-time Active Member of the A.W.W.A. The article cites the company's conversion from its big 1940 business in water mains for Army camps and defense housing to the present business of shells, gun mounts, howitzer barrels, etc.

(*Continued on page 48*)

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1924—January, July, September
1926—January, February, April, May, June, September, November
1929—January, February, April
1930—January, February, April, May, March, November, December
1936—January, March, April, November, December
1937—January, February, March, July, October
1938—January
1939—January, March, October
1940—January
1941—July, September
1942—January

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FOR OVER 50 YEARS

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OLD GLORY

and the Army-Navy "E" Pennant

fly above our foundries and shops where the wheels of industry are humming night and day in the united effort for freedom's preservation.

More permanent, however, than the products for war are the BUILDERS VENTURI METERS, VENTURI CONTROLLERS, and CHRONOFLO TELEMETERS in the water supply systems and purification plants throughout the United States. Day in and day out, they play a vital role in the economical production and conservation of the water supply.

Back in the old days, second-rate Roman sculptors who made unsightly nicks in the marble would secretly patch up the flaws with a mixture of wax and marble dust. These patches would drop out later on and honest artists suffered so much that they began labelling their handiwork "Sine Cera" (i. e. Without Wax); from this we derive our word "sincere," meaning honest, genuine, real.

ARMY E NAVY
AWARDED AUG. 1st 1942

BUILDERS-PROVIDENCE, INC.

Est. 1830 • DIVISION OF BUILDERS IRON FOUNDRY • Inc. 1863

9 CODDING STREET • PROVIDENCE, R. I.

BUILDERS WATER AND SEWAGE WORKS Equipment

(*Continued from page 46*)

Pressure-treated wood manhole covers, originated by officials of Los Angeles County, are now replacing cast-iron manhole covers, to release hundreds of tons of metal to the armament program.

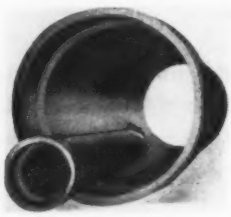
The cover is made with laminated wood strips fashioned in either hexagonal or circular shape. Plans call for nailing the 2 × 4 × 8-in. laminated strips with four 20-penny nails to each strip, and running at least two ⅜-in. bolts through all members, contersinking both bolt ends. Where it is difficult to obtain nails and bolts, it has been suggested that wood dowels and waterproof glue may be used.

To specialize in oil-to-coal conversion problems, a new company has been formed—American Automatic Heating Corp., 152 West 42nd St., New York, N.Y. Trained heating engineers operating from branch offices are immediately available for consultation with war plant executives, municipal authorities and building managements. Where the Company's engineers find conversion conditions favorable, and proper authorization is obtained from local WPB authorities, fully automatic stokers will be installed and locally serviced by factory-trained personnel.

(*Continued on page 50*)

PIPE diameters Large & Small

This Jointing Compound handles 'em all!



6" and less—48" and more: they all look alike to *Tegul*-MINERALEAD • No caulking. No deep bell holes. No need of skilled labor • Quick setting • 10 lb. ingot maintains correct composition and is easy to handle, economical to ship • *Tegul*-MINERALEAD has far above average resistance to mechanical and thermal shock • Gives permanently tight, trouble-free joints at ultimately lower cost • Write for further, money-saving information about

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Valve Boxes
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Serving the UNITED NATIONS and YOU

It is Activated Alum's privilege to be the favorite filter alum in many cities, from whom many active defense industries secure their water supplies.

Activated Alum and Blackalum are also favorite water treatment chemicals in many army posts—either securing their water supply from cities where Activated Alum or Blackalum is used or in their own water treatment plants.

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PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

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MABBS RAWHIDE PACKING

An Ideal Packing for Water Works and Sewage Pumps and Valves

MABBS HYDRAULIC PACKING COMPANY, *Inc. 1892*

431 S. Dearborn St., Chicago, Ill.

(*Continued from page 48*)

"Silting of Reservoirs" is Tech. Bul. No. 52, for sale by the Superintendent of Documents, Washington, D.C., for one dollar. It was written by Henry M. Eakin, Head, Sedimentation Studies, Div. of Research, Soil Conservation Service, Dept. of Agriculture. Carl B. Brown, Project Supervisor, Reservoir Investigations, Soil Conservation, Dept. of Agriculture, revised the document recently. It is now a 168-page book with numerous maps, charts and illustrations, complete with index.

Points of consideration for post-war planning were covered in a recent address by Guy Howard Humphreys in his inaugural address as president of the (British) Institution of Sanitary Engineers. These points are here reprinted from *The Surveyor* (British) for January 15, 1943:

Most of us, I expect, have given thought to some of the more detailed engineering and other points which must be considered in reconstruction, and our methods of approach to the multitude of problems which will arise would certainly vary according to our professional training and outlook. With a view to promoting discussion and thought, I would venture to make a few suggestions which are based upon my professional life as a civil engineer but the following points do I think deserve special consideration:

1. The development of composting as a means for turning sewage sludge into a valuable manure which can be marketed on an economic basis—a most difficult problem.

2. Research into electrical methods for the coagulation and settlement of raw sewage.

3. The development of new methods of pumping sewage whereby the major solids are removed from the liquid and by-passed around the pump; by these means better efficiency could be obtained and maintained. Work is already in progress on these lines.

(*Continued on page 52*)

COOK Well Strainers

A reciprocal relation, the life and functioning of the one depending much on the other.

A. D. COOK, INC.

Lawrenceburg - Indiana

COOK Deep-Well Turbine Pumps

WHAT IS YOUR CHEMICAL FEEDING PROBLEM?

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For Pumped Water Systems
Constant Rate Feeders
Manual Adjustment

Fig. 1

Fig. 2

Fig. 3

Fig. 1. Heavy Duty Midget Chlor-O-Feeder

Fig. 2. Duplex Multi-control Feeder

Fig. 3. Triplex Multi-control Feeder

Fig. 4. High Pressure Midget Chem-O-Feeder

Fig. 5. Low Pressure Chem-O-Feeder

Fig. 6. High Pressure Chem-O-Feeder

Fig. 7. Belt Shifter Heavy Duty Midget Chlor-O-Feeder

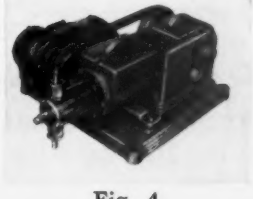


Fig. 4

For Gravity Flow Systems
Flow Proportional Feeders
Automatic Adjustment

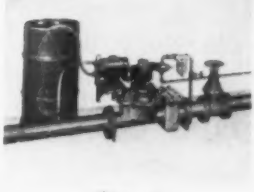


Fig. 5

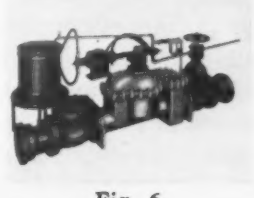


Fig. 6

Fig. 7

61 CODDING ST. % PROPORTIONEERS, INC. % PROVIDENCE, R. I.

(*Continued from page 50*)

4. The production of a cheap, non-corrodible sewer pipe which is not brittle.

5. Improvements in our methods of plumbing to obviate disfigurement of buildings by festoons of external pipes and to facilitate internal repairs and maintenance.

6. More efficient hot water and lighting systems whereby heat is not wasted.

7. An overhaul of our legislation concerning water supplies so as to facilitate and cheapen the preparation of schemes and to encourage the abstraction of water from streams and rivers.

8. The development of bolder methods of water treatment so that more use could be made of stream and river water.

9. The development of economic means for removing chlorides, etc., from sea water so as to make it fit for human consumption.

10. A revision of our methods of design of water distribution mains based on a code of practice drawn up as a result of the experience derived from aerial bombardment.

11. Segregation of traffic on our roads, starting perhaps with new roads in our replanned cities and towns, so as to avoid the existing conglomeration of fast, slow, heavy and light traffic and pedestrians.

12. The application of the theories of soil mechanics to road foundations.

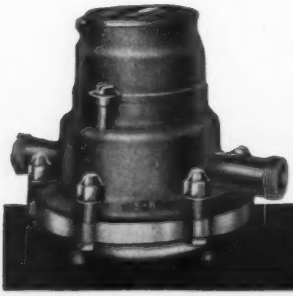
13. Improvements to the appearance of our roads, such as adequate tree and shrub planting, the removal of hoardings and bungaloid growths resulting from ribbon development.

14. Strengthening of our bridges to carry modern traffic.

15. New designs of houses with provision for air-conditioning, double windows, lifts for food and other goods, adequate means for handling fuel, electrical equipment for kitchen work and for cleaning and polishing floors and furniture, sound-proofing to keep sounds in as well as out.

(*Continued on page 54*)

NIAGARA IRON CASE WATER METERS

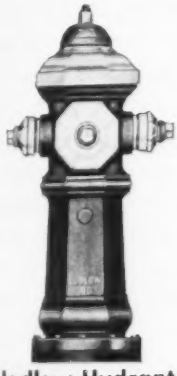


provide wartime copper conservation plus the time-proved Niagara design. They comply with victory-meter limitations. Works are interchangeable with American Bronze Case Meters.

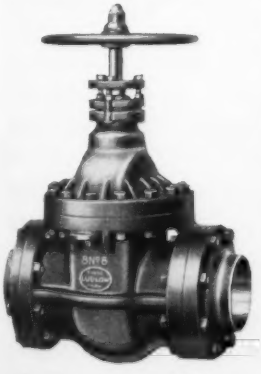
WRITE FOR CATALOG.

BUFFALO METER COMPANY
Established 1892 2914 Main St., Buffalo, N. Y.

PRIORITIES . . .
a necessary blessing!



Ludlow Hydrant



Ludlow Gate Valve

A Necessary Evil?—this was our first impression of the Priority idea and its restrictions on buying, manufacturing and selling. But as we saw America answer the Axis threat, we came to regard the pinch of Priority as a Necessary Blessing!

We are glad to be able to give Uncle Sam our best efforts. We are glad, too, that a portion of our production may be allotted to our friends in the water works field who have priority rating. In real necessity, a high priority rating is usually granted. But without it, regulations do not permit us to fill orders promptly.

To aid our customers, we will furnish them with interpretations of priority regulations and amendments sent us by the War Production Board. We will serve you in every possible way till Victory allows our usual complete fulfillment of your valued needs.

THE LUDLOW VALVE MANUFACTURING CO., INC.
TROY, NEW YORK

V-4

LUDLOW SINCE 1866 VALVES

(*Continued from page 52*)

16. New designs for the week-end cottage with special attention to the need for this type of structure to be labour saving in every possible way.

17. Prefabrication of houses.

18. Standard methods of design regarding air raid shelters, emergency food stores, blast walls, reinforced roofs and structures to prevent collapse.

19. Equipment of private garages for the proper servicing of cars.

20. Development of new types of building material, such as plastics, magnesium and plastics reinforced with magnesium.

Other Needs: There is a host of miscellaneous matters which could be added which are not all of an engineering character, but which all form parts of the jigsaw puzzle. I would refer to the need for some form of public control of all land whereby the selfish or greedy landowner is prevented from holding up works designed for the benefit of the public, assistance to agriculture by way of cheaper electric energy, extended facilities for buying or hiring agricultural plant, cheap manures and the necessity for supervising farming operations to ensure that the best possible use is being made of the land. Swamp drainage and reclamation, afforestation, refuse sorting and collection from houses, and improved factory design must be included.

As regards the execution of public works, a helpful innovation would be the establishment of a paid board of engineering arbitrators to adjudicate on disputes arising from contract work. This system would cheapen and expediate the settlement of such disputes and would relieve our courts of a very substantial burden.

I should like to see another innovation whereby professional men are required periodically to undergo refresher courses to ensure that they are kept in close touch with the latest practice. The popularity of this might be open to question.

A nation-wide movement for improving the appearance of the country would have highly beneficial results. We should remove advertisement signs and hoardings, refuse to allow ugly buildings to be erected, insist on litter being cleared up and abolish rubbish dumps; by these means some degree of pride in our country would be fostered.

All students of engineering should be encouraged to study aesthetics and engineers should rid themselves of that pernicious doctrine that because a structure is fitted for the task it has to perform the design is satisfactory; this has been too often used as a cloak for a paucity of architectural treatment.

I must end this address with a plea for the education of the nation in a knowledge of the problems which will confront it in our attempts to reconstruct. We can do wonders if we are told the truth. In fact, we might almost be justified in saying—Give us the truth and we will finish the job.

NEWS OF THE FIELD

Prompt action is required so that the peacetime legal restrictions placed upon water works executives who buy or sell material do not interfere with procedure required by Order U–1 (sent all A.W.W.A. members under date of February 27, 1943, and also commented on in the text of this issue of the JOURNAL).

The requirements relating to exchange or sale of surplus are such that unless a water department agrees to sale of its excess materials, it may be cut off from the benefits of the order. There has been some confusion over sales of surplus due to ordinance or charter restrictions upon the acts of municipal employees. It is highly important that water works executives discuss the "surplus sales" requirements of this order with their chief executive and the city's or department's legal counsel. If it is the opinion of the counsel that conformance to the terms of the order requires action by city council or similar body, such legislation should be drawn up at once. In other words, if the present restrictions on purchase and/or sale of water department property make it necessary to advertise, to take bids, etc., in order to buy or sell material, the council or equivalent body should be asked to enact an ordinance to the effect that, during the war emergency, those restrictions are set aside for transactions carried on under the terms of orders from the office of the Director of the Office of War Utilities.

A proposed amendment to the War Emergency Law of New York, intended to clarify the situation, follows: "Lease, (or) loan or sale of municipal property. Notwithstanding any inconsistent provision of law, general, special or local, the chief executive of any county, city, town or village, with the approval of the governing body thereof, from time to time, during the continuance of the present war, whenever he deems it to be in the public interest, may, on such terms and conditions as he may deem necessary to promote the public welfare and protect the interests of such municipality, lease or lend any real or personal property or sell any water works materials, equipment or supplies of such municipal subdivision, or authorize the temporary transfer or employment of personnel of such municipal subdivision to the army, navy or any other branch of the armed forces of the United States of America or to another municipal subdivision(;) or to loan or sell water works materials, equipment or supplies, to any person or corporation engaged in the business of supplying water to the public; provided that any lease or contract entered into pursuant to this section shall be for a period not longer than the effective period of this act."

(*Continued on page 2*)

(*Continued from page 1*)

No municipal water works executive can afford to overlook this general situation. If charter or ordinance restrictions limit his ability to buy or sell material in compliance with WPB orders, he should take all steps possible to obtain a wartime ordinance from his city council or other appropriate body to clear his authority.

The Federal Public Housing Authority is reported to be planning to use Saran tubing and fittings, made by the Dow Chemical Co., in water service in several thousand housing units within the next few months. A study of Saran tubing has been conducted by Dean F. M. Dawson of the College of Eng., Univ. of Iowa, who will report his findings in a paper to be delivered at the A.W.W.A. Conference in Cleveland, June 15–18.

Seven new critical labor supply areas have been cited by the War Manpower Com. in OWI release PM–4340. These are: Portland, Me.; Burlington, N.C.; Evansville, Ind.; Gary-Hammond-South Chicago, Ind. and Ill.; Tampa, Fla.; Savannah, Ga.; and Wilmington, N.C. The total number of critical labor supply areas now stands at 36, for while the above were added the following three were removed from the list: Akron, Ohio; Bath, Me.; and Portsmouth, N.H. This realignment will be of interest when compared with the tabulation "The Future for U.S. Cities" given on p. 2 of the March News of the Field. The WMC classification of 270 industrial areas according to the availability of labor was intended primarily as a guide for procurement agencies in the placing or renewing of war contracts.

Rules governing the procurement of tires and recaps are herewith recapitulated on the basis of information supplied by the Office of Price Administration and released by the Office of War Information on March 9 and 16.

It was pointed out that the desire to have car owners recap their tires in time, so that a potentially recappable tire is not lost entirely, was the chief reason for freeing passenger car tire recapping from rationing restrictions. This step had been made possible by control of mileage of passenger cars through gasoline rationing.

There is no restriction on the recapping of passenger car tires with "passenger type camel-back." "Camel-back" is any rubber compound designed for application to a worn tire to make a new tread. "Passenger type" camel-back is made of reclaimed rubber only, using no crude.

All passenger cars are also eligible for some type of replacement tire, if their present tires are not recappable. The grade of tire for which a car is eligible depends upon the gas mileage allowed the particular vehicle.

(*Continued on page 4*)

HOW TO MODERNIZE A WATER PLANT!

DORRCO FLOCCULATORS AND SQUAREX CLARIFIERS FOR 150 M.G.D. OF SOFTENING AT KANSAS CITY

THE six Dorrco Squarex Clarifiers and 8 units of Dorrco Flocculators shown above are the backbone of the Kansas City, Missouri Water Works modernization program just completed. All were installed in existing plain tanks—at a fraction of the cost of an entirely new installation with new tanks.

Reasons for modernizations like Kansas City are simple. First, the installation of mechanical units in existing tanks saves expensive new tank construction. Second, flocculation plus sedimentation results in greater capacity per unit, or superior results at normal flows. In short—maximum results with minimum expenditure.

Reasons for installing *Dorr* units are equally simple. The Dorrco Squarex Clarifier was designed specifically for square tanks—can easily be installed in multiple. In combination with Dorrco Flocculators, it comprises a completely flexible unit which can be adapted to any size and shape of existing tank.

If you're thinking in terms of modernization and plain basins are available it will pay you to check further. We'll gladly send you bulletins and complete information.

DORRCO

The DORR COMPANY Inc.

ENGINEERS · 570 LEXINGTON AVE. · NEW YORK

ATLANTA TORONTO CHICAGO DENVER LOS ANGELES

(*Continued from page 2*)

Thus, cars with mileage allowances up to 240 mi. a month (A and B cards) are entitled to Grade 2 tires, which are "Victory" tires, that is, tires of reclaimed rubber, damaged new tires, factory seconds, tires made before 1938, or used tires. (This is in addition to the permission to recap the car's own tires.)

Cars with mileage allowances of from 560 to 1000 mi. a month (C cards), are entitled to Grade 1 tires, which are tires of the highest quality.

Cars with mileage allowances of more than 1000 mi. a month (C card with longer mileage) can have choice of any kind of passenger tire.

Trucks and trailers included in the List A eligibility classification in OPA's regulations (those vehicles providing services deemed most essential by OPA) are eligible for new crude rubber tires if their present casings cannot be recapped, according to paragraph (f)(2) which reads:

"Transportation of materials and equipment for construction or for mechanical, structural, or highway maintenance or repair."

Water works executives will recall or refer to the letter from Robert S. Betten, Chief of the OPA Tire Rationing Branch, reproduced on p. 1924 of the December 1942 JOURNAL, the pertinent paragraph from which is:

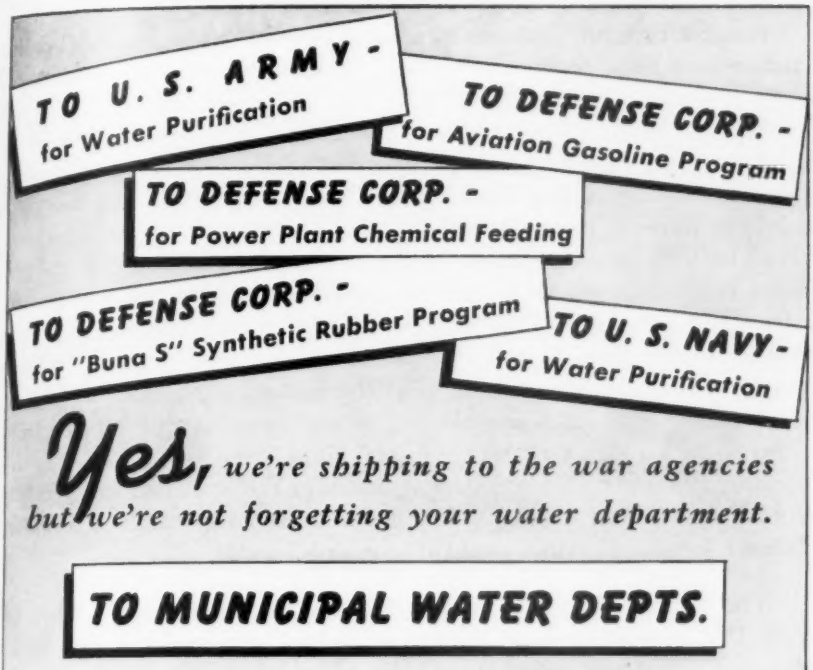
"The repair service mentioned in this paragraph [(f)(2)] is not limited to highway repairs but would include the repairs necessary for the maintenance of water supply systems."

(*Continued on page 6*)

A. E. Kelso, Engr. of Water Supply, Melbourne and Metropolitan Board of Works, Melbourne, died on January 12. Mr. Kelso will be remembered by many American water works men for his visits to this continent. Extracts from a report he made on "Water Supply Practice in the United States" appeared in the July 1942 JOURNAL. The survey was undertaken in conjunction with the planning of the Upper Yarra Project, for the supply of water to the City of Melbourne. The complete bound report, published in Australia in 1941, covers the design, construction methods, and performance features of water supply and distribution structures and goes into detail on the subject of dams, particularly earth fills.

In the preface to the volume, J. C. Jessop, Chairman of the Melbourne and Metropolitan Board of Works, says:

"For this conspicuous service Mr. Kelso is entitled to the thanks, not only of the Board, but of all members of his profession and of all others interested in providing for this universally vital need, a pure and adequate supply of water."


TO U. S. ARMY -
for Water Purification
TO DEFENSE CORP. -
for Aviation Gasoline Program
TO DEFENSE CORP. -
for Power Plant Chemical Feeding
TO DEFENSE CORP. -
for "Buna S" Synthetic Rubber Program
TO U. S. NAVY -
for Water Purification

Yes, we're shipping to the war agencies but we're not forgetting your water department.

TO MUNICIPAL WATER DEPTS.

In spite of priority delays a goodly proportion of our 1942 shipments were made to Municipal Water Works throughout the country. New equipment for the war effort is being developed along lines which will make it fully applicable to the peace-time needs of water works. Thus, in time of war, we are preparing for peace when this equipment will be available to municipalities. Meantime, % Proportioneers % welcomes your inquiries and will serve you to the best of its ability.

% PROPORTIONEERS, INC. %
CODDING STREET · PROVIDENCE, R. I.

(*Continued from page 4*)

A substitute for Japanese agar-agar is offered in a material called Carragar now being produced on a large scale on the site of the century-old Irish moss industry at Scituate, Mass.

Carragar is specifically designed to replace agar-agar, either in its entirety or in major part, in the many and varied uses to which agar is put in bacteriological and genetics laboratories. It is reported that tests have been made of its use as the solidifying agent in plain, enriched and special bacteriological media, as well as in genetics substrates. Its producers recommend its use in the routine preparation of pour plates for water and milk work, and for both semi-solid and deep stab culture media. All organisms reported tested thus far have shown either as good or better growth on Carragar media as on agar-agar controls.

Carragar is an exclusive product of the Carragheen Products Dept. of the Krim-Ko Co., Box 311, Scituate, Mass.

EDITOR'S NOTE: No official acceptance of this material has yet been issued by the A.P.H.A. and A.W.W.A. who are co-sponsors of *Standard Methods for the Examination of Water and Sewage.*

The organization of a sewerage and sanitation section within the WPB Div. of Governmental Requirements has been recommended by the following committee, acting on the invitation of the Division's Director Maury Maverick: Linn H. Enslow, for the A.S.C.E.; George J. Schroepfer, for the Fed. of Sewage Works Assns.; and William Raisch, for the A.S.M.E.

The proposed section would review all priority matters relating to new sewage and sanitation construction and maintenance coming within the jurisdiction of the Division, passing on whether or not projects are essential, and recommending acceptance or rejection. The Committee proposed that the administrator of the division be someone of demonstrable executive ability and national recognition in the sewerage and sewage treatment field.

Members of the A.W.W.A. who have noted the continuous improvement in the editorial characteristics of the JOURNAL will be interested to know that Victor H. Allen, associated with the JOURNAL for nearly five years, and Eric F. Johnson, now beginning his fourth year with the JOURNAL, carry on their duties under the titles of Managing Editor and Associate Editor, respectively. Allen handles the general planning and JOURNAL production and manages advertising. Johnson edits each author's paper to conformity with standard style and manages the Abstracts in the JOURNAL.

General editorial policy and approval of material for JOURNAL publication continue to be controlled by the Association's Secretary, Harry E. Jordan.

(*Continued on page 8*)

Looking ahead with Asbestos

"WATER WHEN WE NEED IT WHERE WE WANT IT . . ."

"That's what an airfield *has* to have—a 'grid' system of mains under the field with outlets everywhere. Water must be handy to fight a hangar fire or to service aircraft on the field. It calls for lots of pipe-laying—and with no time to waste—that means one kind of pipe . . . 'Century' Asbestos-Cement Pipe. It's not bulky or heavy—it's *light*—can be handled *fast* with a minimum of labor. Has simple, flexible couplings, too, to make assembly easy.

"I watched them install K&M 'Century' Pipe here—and believe me, it's what our hometown will have, when I get back to water works engineering."

It's what a lot of towns will have. In fact, with the immense wartime demand for this modern pipe relaxing somewhat, we can now supply some municipalities with limited amounts for government-approved work.

The advantages of this adaptable, economical pipe just begin with its handling ease and rapid installation. Its smooth bore reduces friction, saves pumping costs. The bore *stays* smooth, too. No corrosion or tuberculation will change the flow area of this pipe . . . to steal carrying capacity and pressure.

At K&M, as with other manufacturers, war needs have inspired research, developed new products and new ways to make them, boosted production to an all-time high.

We believe that Industry with its new, war-born capacities and abilities can and will use them to create work and opportunity, and better living for all.

* * *

Nature made asbestos;
Keasbey & Mattison,
America's asbestos pioneer,
has made it serve mankind . . . since 1873

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains

(*Continued from page 6*)

Time standards used by federal agencies for observing, recording and publishing hydrologic data as affected by transition from Standard Time to War Time have been prepared by the Water Resources Committee of the National Resources Planning Board. After a meeting and discussion by representatives of the various bureaus concerned, it was decided that all data after 2:00 A.M., February 9, 1942, be observed and recorded in War Time; that Standard Time be used for the publication of all hydrologic data which are intended for permanent and official records; and that all published records be labeled clearly relative to the time basis used.

Metal surfacing and tool tipping techniques are helping greatly to save materials and time both in mechanical maintenance and manufacturing conservation. A release by the OWI for the WPB under date of March 12 gives many applications in manufacturing and maintenance work for electroplating, especially with chromium, spraying or metallizing, and fusion welding or hard facing. Water works men will be interested to know that tool tipping and metal surfacing are among the important

(*Continued on page 10*)

Easy to Lay

No slow motion. No skilled labor needed to lay permanent water mains with McWane 2″ cast iron pipe.

All you need is a wrench—for all you do is "screw 'em together" above ground, then "snake" the line into the trench. Immediate Shipments.

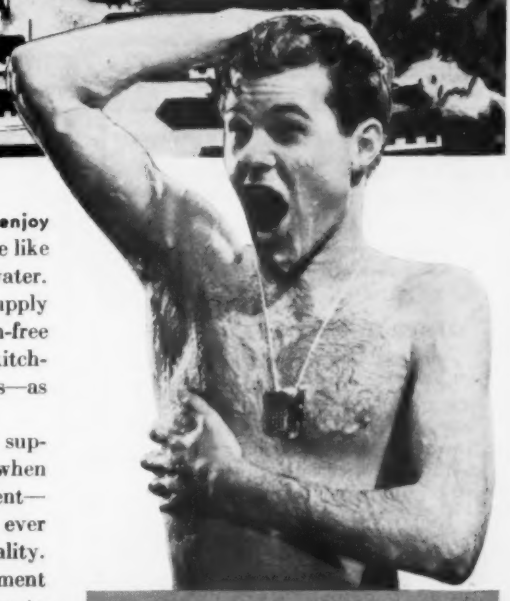
McWANE CAST IRON PIPE CO.
BIRMINGHAM, ALA.

McWANE 2″ CAST IRON PIPE

HIGH QUALITY VALVES HYDRANTS

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34. Address M & H Valve and Fittings Company, Anniston, Alabama.

NOW AT SOLDIER CITY— SOFT WATER BY "PERMUTIT"



After the war, your city, too, can enjoy good water—plan it now! Camps are like good-sized cities—they need good water. Permutit* equipment is helping to supply many of them with soft, clear, iron-free water for post hospitals, laundries, kitchens, swimming pools, power plants—as well as for general community use.

That's why Permutit cannot now supply installations for *your* city. But when Victory is won, Permutit equipment—more practical and economical than ever—will be available for *every* municipality. Prepare *now* for this public improvement in your community. Just drop a line to The Permutit Company, Dept. G2, 330 West 42nd St., New York, N. Y. In Canada: Permutit Company of Canada, Ltd. . . Montreal . . Toronto . . Winnipeg . . Calgary.

PERMUTIT

WATER CONDITIONING HEADQUARTERS

*Trademark Reg. U. S. Pat. Off.

(*Continued from page 8*)

means by which the WPB, the armed services and manufacturers are working out more sensible specifications. Applications in water works maintenance have been given in several papers in the JOURNAL in the past two years.

Lack of manpower may require the shutting down of the sewage treatment plant at Elmira, N.Y., according to a report by Ralph D. Klebes, City Mgr. He has notified the State Health Dept. of the situation. The plant which normally employs seven men now is operating with only four, and efforts to obtain suitable replacements have been to no avail.

Mrs. Milton A. Kallis, whose signature "Selma Gottlieb" has been appearing in the JOURNAL Abstracts Section for many years, is now an analyst in the Board of Economic Warfare, Washington, D.C. She writes to A.W.W.A. headquarters that her experience in abstracting is proving very helpful now in making things short and to the point for busy people.

Mrs. Kallis, who has been an Association member since May 1933, holds A.B., A.M., and Ph.D. degrees from the University of Kansas. She

(*Continued on page 12*)

STOP RUST

IN

STEEL TANKS

and

OTHER SUBMERGED METALS

—•—

The RUSTOP (cathodic) System instantly stops rust—thus preserving valuable equipment now in use. Installed while tanks are filled, without service interruptions.

CATHODIC PROTECTION APPROVED BY A.W.W.A.

MATERIALS NOW AVAILABLE FOR

RUSTOP THE CATHODIC SYSTEM OF CORROSION PREVENTION

ELECTRO RUST-PROOFING CO.

DAYTON • OHIO

Vogt Fire Hydrants

Standard—

"Traffic Model"—

Flush Type—

Water Crane—

Type

Vogt Gate Valves

Non-Rising Stem—Outside Screw and Yoke—Hub End—Flanged End—Ends to Fit any Type Pipe.

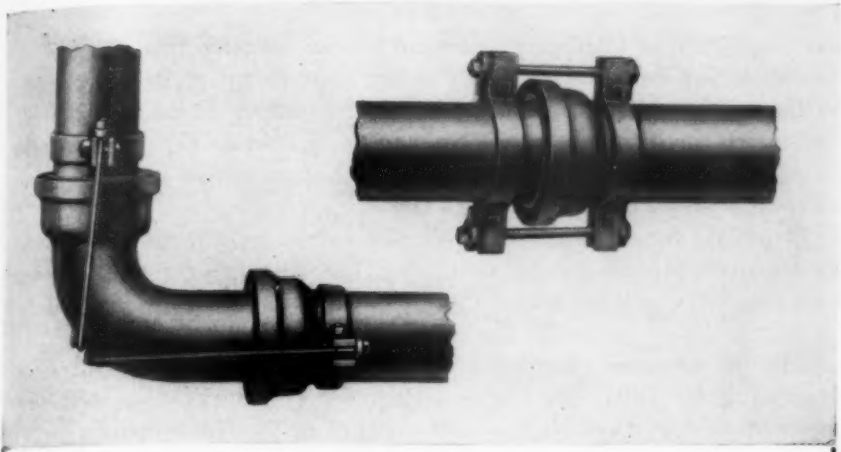
Also—Floor Stands, Shear Gates—Tapping Sleeves and Valves, Flap Valves and Mud Valves.

Vogt Brothers Mfg. Co.

INCORPORATED

MAIN AT 14th ST.

LOUISVILLE KENTUCKY



Timely

MAINTENANCE SAVERS!

Man-power is too scarce these days to waste on exploration and digging for leaks caused by needless loosening of underground joints. Save this costly maintenance by laying your pipes with Grinnell Socket Fittings and Grinnell Socket Clamps. Every joint will be permanently *locked against leaks!*

Grinnell Steel Socket Clamps are protected against corrosion by durable coal-tar-pitch varnish. Available in Friction Types, as well as Positive Types for use on Grinnell Socket Bends equipped with convenient lugs. Wide range of lengths and sizes to handle any joint.

Specify Grinnell Socket Fittings with Grinnell Socket Clamps .... provide joints that *stay* tight without maintenance! Write for complete Catalog. Grinnell Company, Inc., Executive Offices, Providence, Rhode Island. Branch offices in principal cities.

SOCKET FITTINGS BY

GRINNELL

WHENEVER **PIPING** IS INVOLVED

(*Continued from page 10*)

was Asst. Prof. of Chemistry there and was at the same time Chemist in the Water and Sewage Laboratory of the State Board of Health, located on the campus. In this position, she made a study of the pollution of Kansas fresh water sources by brines from oil field development, carried on work on the determination of fluorides in Kansas waters and did routine chemical analyses on water and sewage.

In 1935, she exchanged her technical career for a domestic one, but she "kept her hand in" by continuing her abstracting duties for the JOURNAL. The war brought her out of her partial retirement in January.

D. B. Dickson, for some time Supt. and Chemist, Filtration Plant, Wichita Falls, Tex., is now Engineer (Sanitary) connected with the Southwestern Division Engineer attached to the Headquarters Eighth Service Command, Dallas, Tex.

(*Continued on page 14*)

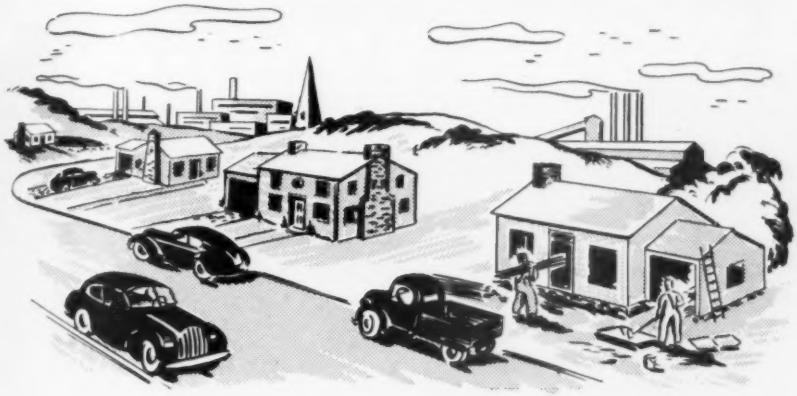
Merrill N. Davis, Exec. Vice-Pres. and Secy., Dresser Mfg. Co., Bradford, Pa., died suddenly on March 7 in Bradford.

He was born at Millbridge, Me., in 1886, and received his public education in Maine where he worked summers in canning factories with which his father was identified. When fifteen, he went to Boston and secured employment with Henry K. Barnes (now Henry K. Barnes Co.) and after two years went to the Empire Rubber Mfg. Co. of Boston as clerk. Two and a half years later he became connected with the B. F. Goodrich Rubber Co., as correspondent, later serving as Maritime Province and Newfoundland representative for the same Company for several years. He was also assigned as special representative on oil and gas field mechanical rubber goods.

In 1916 he helped organize the Rexhide Rubber Mfg. Co., later becoming Vice-Pres. and Sales Mgr., but leaving after two years to return to the Goodrich Rubber Co.

In August, 1919, Mr. Davis became associated with the Dresser Mfg. Co., in charge of sales and advertising. He became a Director of Dresser in December 1928 and in January 1929 was made Vice-Pres. of the Company. In 1932 he was given the additional title of Secy.

He was actively identified with the Association of Gas Appliances & Equipment Mfrs. since it was organized in 1935, serving as Vice-Pres. in 1935–36 and as Pres. the following year. He was a member of many Gas Associations and numerous clubs. He was Vice-Pres. of the Pennsylvania State Chamber of Commerce and a member of the Boy Scout Council of America.



You can do something about tomorrow-

Today

RIGHT NOW, VICTORY COMES FIRST. America is in the middle of the biggest job it ever tackled—the job of winning a war. And it's full time work.

But, remember, there's a tomorrow coming—a tomorrow of peacetime rebuilding for a world that has long been denied many things that are essential to normal living. There's hardly a community that will not be affected. New homes—new industries—new demands on municipal service. Equipment for water conditioning and sewage treatment, though perhaps adequate for today, may be severely taxed by the needs of tomorrow. And the time to plan for these demands is today.

In anticipating your needs for replacement of equipment or expansion of your facilities, consult Graver. Hundreds of installations in municipalities all over the country attest to the exceptional efficiency and economy of Graver equipment. Our engineers will gladly advise with you on any specific problem of water conditioning or sewage treatment, and they're backed by years of experience in this highly specialized work.

Write Graver—today. There's no obligation.

WATER SOFTENERS
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STEEL STORAGE TANKS
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NEW YORK CATASAUQUA, PA.
CHICAGO TULSA

43-12-W

(*Continued from page 12*)

Lt. Col. Max Levine, former Prof. of Bacteriology, Iowa State College, Ames, Iowa, is now posted at the Brooke General Hospital, Fort Sam Houston, Tex. Col. Levine entered the Service a year ago with the rank of Major in the Sanitary Corps.

Three of Col. Levine's sons are now commissioned officers in the Army: Lt. Norman D. Levine, Sanitary Corps; Lt. S. Edgar Levine, Engineer Corps, now stationed in India; and Lt. Melvin L. Levine, Field Artillery, attached to the Chemical Warfare Service.

William F. Uhl, Jr. San. Engr. for the Indiana State Board of Health, stationed at Indianapolis, has been granted a leave of absence to permit his taking up a commission as Lieutenant in the Army Sanitary Corps.

Mentor Hetzer, Manager of the Moundsville, W.Va., Water Co., retired at the beginning of this year due to ill health. He has to his credit more than 40 years' service and has been an Active Member of the A.W.W.A. since 1916. He was A.W.W.A. Director from the West

(*Continued on page 16*)

AMERICAN WATER WORKS ASSOCIATION

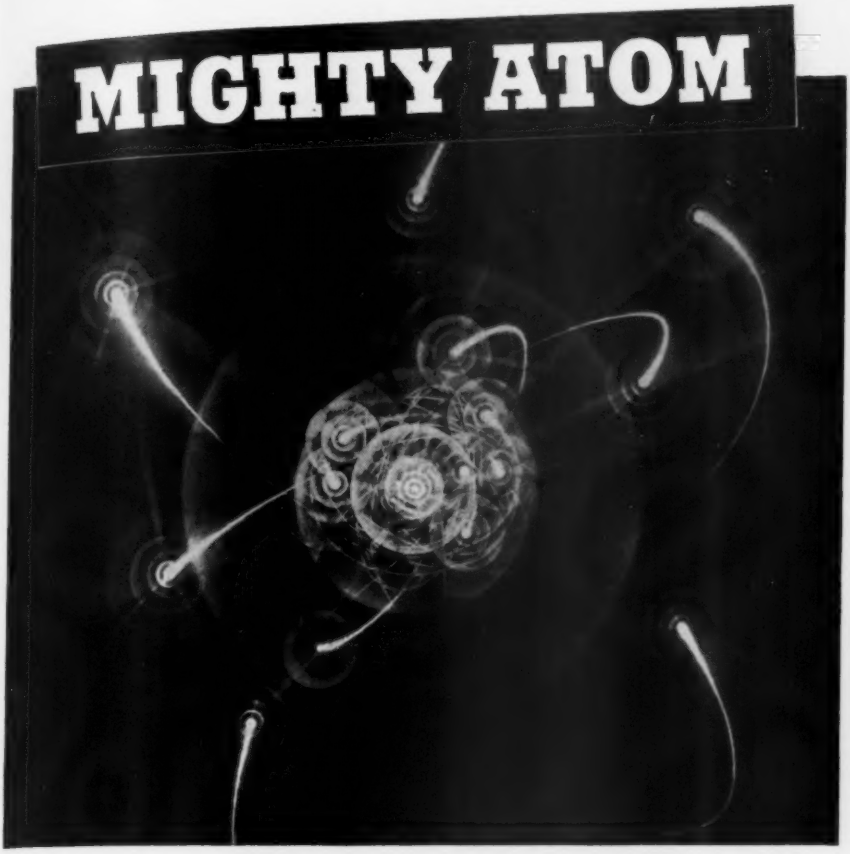
Conference on Wartime Water Works Problems

Cleveland - June 15-18, 1943

MAKE RESERVATIONS NOW BY WRITING DIRECTLY TO:

CARTER HOTEL	*or*	STATLER HOTEL
$3.00, 3.50, 4.00, 4.50	***Single Rooms***	**$3.00, 3.50, 4.00, 4.50, 5.00, 6.00**
$5.00, 5.50, 6.00, 6.50	***Double Rooms (for two)***	**$5.00, 5.50, 6.50, 7.00, 8.00**
$6.00, 7.00, 8.00	***Twin Bedrooms (for two)***	**$5.00, 5.50, 6.00, 6.50, 7.00, 7.50, 8.00**
From 12 to 20 available *(describe by letter)*	***Suites***	**From 10 to 15 available *(describe by letter)***

FOR BEST RESERVATIONS, WRITE NOW—
AND REFER SPECIFICALLY AND CLEARLY TO THE ABOVE SCHEDULE



THE illustration above is a graphic conception of the atomic structure of chlorine. The nucleus and its planetary electrons are shown in a relationship suggesting the origin of the chemical and physical properties peculiar to this interesting element. The complex mass relationships and forces are so balanced in the chlorine atom as to produce one of mankind's useful chemical servants.

Chlorine is a potent ally in both war and peace. Most of the million plus tons per year now being produced are earmarked for essential wartime and essential civilian uses. When victory comes, chlorine will again take up its many full-time roles in wide commercial application.

Among the nation's largest producers of chlorine are the Wyandotte, Michigan, and Tacoma, Washington, plants of the Pennsylvania Salt Manufacturing Company. It was from the Wyandotte plant that Penn Salt shipped America's first commercial quantity of liquid chlorine in 1909.

Wartime production of chlorine at Penn Salt has been a stimulus and an inspiration to our engineers to plan even wider usefulness for this important chemical servant, when peace returns.

PENNSYLVANIA SALT
MANUFACTURING COMPANY
Chemicals
1000 WIDENER BUILDING • PHILADELPHIA
NEW YORK • CHICAGO • ST. LOUIS • PITTSBURGH • WYANDOTTE • TACOMA

(*Continued from page 14*)

Virginia Section in 1939–40 and last fall was chosen by that section to be the recipient of the George W. Fuller Memorial Award.

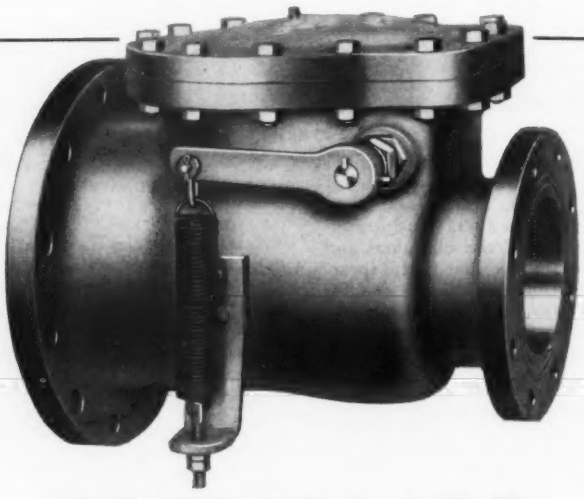
Charles L. Stuart, who has been a member of the staff of the American Water Works & Electric Co. since 1937, has been appointed to succeed Mr. Hetzer. Mr. Stuart has previously been stationed at South Pittsburgh, Pa., Haddon Heights, N.J., and Wichita, Kan.

John Fiske Kegebein Jr. is now employed as a chemist at the United States Fuel Annex, Naval Supply Depot, N.O.B., Norfolk, Va He was formerly Asst. Chemist, Div. of Water, Norfolk.

George E. Symons, Chief Chemist for the Buffalo Sewer Authority, left that position as of April 1 to become Associate Editor of *Water Works & Sewerage.*

Symons was born in Danville, Ill., in 1903, the year when filters were installed in Danville where Symon's father was Supt. of the Water Co. Symons grew up in water works under the eye of his father who still serves at Danville as Chief Engr.

(*Continued on page 18*)



RENSSELAER
LIST 340

Clearway Quiet-Closing Check Valves eliminate "SLAM." Made in straight-thru type, as well as expanding outlet type, for bolting direct to pump discharge. Write for Bulletin V.

RENSSELAER VALVE CO. TROY, N. Y.

HYDRO-TITE

AND DRY BRAIDED FIBREX

A DEPENDABLE SELF-CAULKING JOINT COMPOUND FOR CAST IRON BELL AND SPIGOT WATER MAINS

HYDRO-TITE is a self-caulking sulphur base jointing compound used to joint bell and spigot cast iron water mains and soil pipe. It comes in powder form which insures uniformity and quick melting.

When poured into a joint, HYDRO-TITE immediately solidifies upon contact with the metal and bonds to both the surfaces of the bell and the spigot for the entire depth of the joint. It requires no caulking and after pouring a joint, water pressure may be immediately applied.

HYDRO-TITE is easy to use, no skill being required to make joints that are tight from the start. Joints made with HYDRO-TITE will stand any pressure the pipe will stand.

DRY BRAIDED FIBREX

USED LIKE BRAIDED JUTE
WILL NOT BREED BACTERIA

A SANITARY Packing used in jointing bell and spigot pipe for water, sewer mains and soil pipe.

FIBREX was designed for use with Hydro-Tite and other self-caulking compounds, but is entirely suitable also for joints made with lead, and for Sani-Tite and other asphalt sewer joint compounds. Thousands of pounds of Fibrex are already in service on water lines throughout the country.

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(*Continued from page 16*)

He attended the Univ. of Wisconsin and then the Univ. of Illinois from which he was graduated with a B.S. degree with honors in chemistry. He did graduate work at Illinois in sanitary engineering and bacteriology and by 1932 had received the degrees of M.S. and Ph.D. He became Chemist under Wm. D. Hatfield at the Decatur, Ill., Sewage Disposal Plant and later joined the Illinois State Water Survey. Then he was employed by the Freeport Sulphur Co. on water treatment problems before conducting a consulting practice and subsequently joining the firm of Greeley and Hansen in 1935. Working with that firm, he undertook the design of the modern sewage treatment plant for Buffalo, and when the plant was completed he was retained as Chief Chemist by the Buffalo Sewer Authority, the position which he left to join *Water Works & Sewerage.*

J. Arthur Jensen, 1940 President of the A.W.W.A., has been retired from his post as Engineer of the Minneapolis Water Dept. as the result of the passage by the Minnesota legislature of an amendment to the Municipal Pension and Retirement Act for Minneapolis, reducing the

(*Continued on page 20*)

SAVE FOR DEFENSE

EVERYWHERE Americans are being asked to "SAVE FOR DEFENSE." Water works superintendents, engineers and public officials can do more in this connection by investigating the National Method of water main cleaning. This method restores the carrying capacity of pipe to at least 95 per cent of that of new mains, thereby eliminating the necessity for purchase of new mains. Aside from this the National Method makes possible lower pumping costs, greater delivery, reduced insurance rates and clean water.

Now is the time to do your part—SAVE FOR DEFENSE

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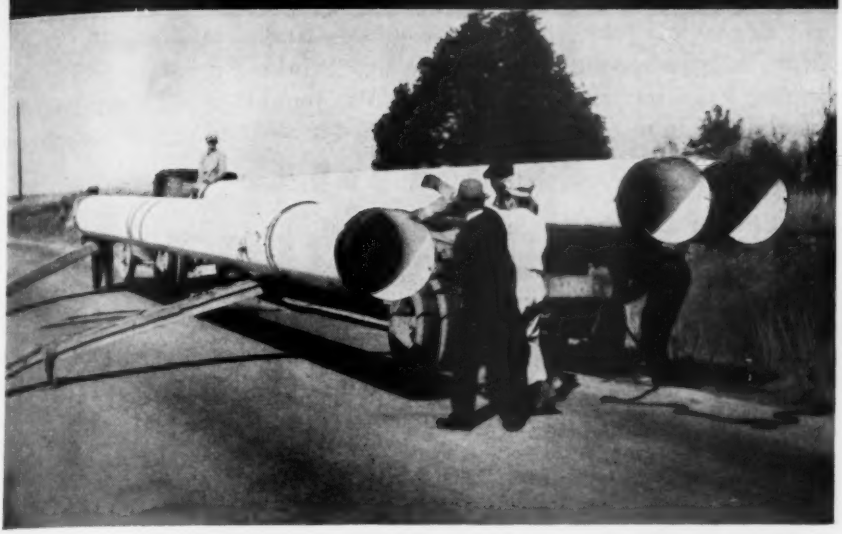
Steel Pipe...WAR WORKER



Yes, steel pipe has joined the ranks of war workers. Now ARMCO "Spiral Welded" is being used on vital war projects instead of the usual peacetime water supply and force mains.

In this new service it meets wartime standards for efficient, maintenance-free performance. Skilled labor is not needed for installation. Fifty-foot lengths mean fewer joints, less assembly work. A spun-enamel lining assures high flow capacity, prevents tuberculation and recurrent cleaning troubles. There is no danger from shattering or sudden breaks because ARMCO Pipe has an ultimate strength of 50,000 to 60,000 pounds per square inch. Sizes range from 6 to 36 inches, with wall thicknesses in any diameter to fit specific jobs.

If you can't get ARMCO Spiral Welded Steel Pipe for other than the most important war projects, remember that Victory comes first. When the war is over, ARMCO Pipe will be ready again to meet your every requirement. The American Rolling Mill Co., Pipe Sales Div., 831 Curtis St., Middletown, Ohio.

ARMCO STEEL PIPE

MEETS A. W. W. A. STANDARD SPECIFICATIONS

(*Continued from page 18*)

age limit for retirement by two years. Under the act, a considerable number of employees, including Mr. Jensen, were automatically retired from service on February 21.

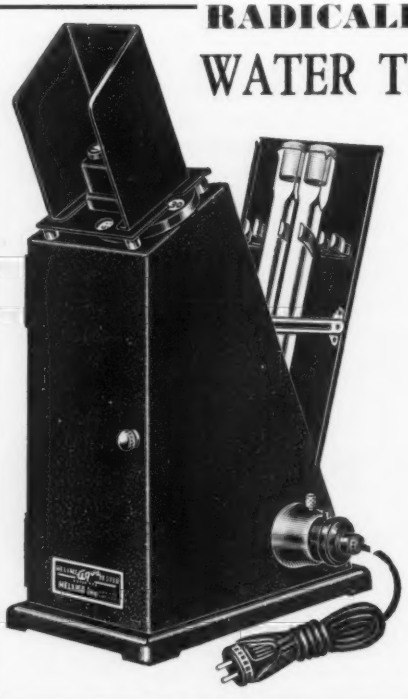
Edgar W. Johnson, who was Asst. Engr., Minneapolis Water Dept., is now serving as Acting Water Works Engr., succeeding the retiring Engineer, J. Arthur Jensen. Mr. Johnson is a Director of the Association, term of '42–'45, and has been a member of the Association for 25 years.

Chester L. Baker, member of the staff of the Philadelphia Quartz Co. for 16 years, has been appointed to the post of Vice-Pres. of Mfg. and Eng. Mr. Baker originally joined the company in Berkley, Calif., as Chief Chemist. He went to Philadelphia in 1935, and was made Chemical Director there in 1940. Other appointments and promotions made are: Claire H. Jeglum, Asst. to the Chem. Director; Harry L. Bolton, Asst. Chem. Mgr. of Quality Control; and Alfred H. McKinney, Chem. Engr.

(*Continued on page 22*)

RADICALLY IMPROVED

WATER TEST COMPARATOR



The new Hellige Aqua Tester combines the thoroughly demonstrated advantages of Hellige *non-fading glass color standards* with radical improvements in design. This new model is, we believe, the most advanced type ever brought on the market and demands special consideration as it brings to its user the utmost in permanent reliability, accuracy, convenience and, last but not least, economy. Standards for all popular A. P. H. A. and A. W. W. A. Methods and Hydrogen Ion Control are available.

Write for Bulletin No. 602.

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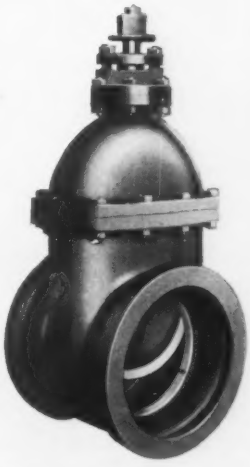

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THE A. P. SMITH MFG. CO.

EAST ORANGE, N. J.

(*Continued from page 20*)

Harvey J. Kulin, former Sales Engr. for the American Well Works, Indianapolis, has been commissioned First Lieutenant in the Sanitary Corps, and is attached to the Station Hospital, Camp Chaffee, Ark.

Horace B. Gulden, City Engr. and Water Works Mgr. of State College, Pa., for the past five years, is now a Lieutenant (J.G.), Civil Engineering Corps, USNR, and assigned to the 72nd U.S. Naval Constr. Battalion. He is at present completing the rigorous advanced military training, which the "Sea Bees" receive, at Camp Endicott, Davisville, R.I.

Lt. Gulden has had eleven years' experience in municipal government work with particular emphasis on design, construction and operation of water and sewage treatment plants. He took his graduate work in Sanitary Engineering at the Massachusetts Institute of Technology, and has had several years experience with various consulting engineers.

Ralph L. Tyler, for nine years manager of the Citizens Water Co., Scottdale, Pa., has assumed the duties of N.J. Division Manager for the Northeastern Water and Electric Service Corp. From headquarters in Palmyra, N.J., he directs the operations of the Ocean City Water Service Co., the Ocean City Sewer Service Co., the New Jersey Water Service Co., and the Little Falls, Frenchtown, Washington, Jamesburg, Ideal Beach, Riverton, Palmyra, Junction and Neptunus Water Companies.

M. F. Gordon, formerly with the Water Utilities Service Co., and the Delaware Valley Utilities Co., Oxford, Pa., has been appointed Division Accountant for the New Jersey properties of the Northeastern Water and Electric Service Corp., with headquarters at its Palmyra, N.J., office.

"Handbook on Education and the War" is a 359-page book based on the Proceedings of the National Institute on Education and the War, held last autumn and attended by some 700 of the nation's education leaders. The Handbook covers 26 key problems grouped under 4 general headings: Training Manpower, School Volunteer War Service, Curriculum in Wartime, and Financing Education in Wartime. Copies are available from the Superintendent of Documents, Washington, D.C., at 55 cents each.

(*Continued on page 34*)

PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

Trade Mark MABBS Reg. U. S. Pat. Off.

MABBS RAWHIDE PACKING

An Ideal Packing for Water Works and Sewage Pumps and Valves

MABBS HYDRAULIC PACKING COMPANY, *Inc. 1892*

431 S. Dearborn St., Chicago, Ill.

BUILT TO ENDURE

Centuries of wear have caused but little real damage to the Sphinx or the Pyramids. . . So it is with MUELLER Brass Goods. Long years of service in actual installations underground have proved their worth to you water works men. Better metal formulae provide resistance to the chemical reaction of the soil. Careful workmanship assures a perfect working product. Rigid inspection eliminates defective pieces. The curb stops and goosenecks shown are built to these high MUELLER standards. Each is tested with 200 lbs. pressure. Because of these features, you can expect years of usefulness from MUELLER Brass Goods. . . . Write for further information on the complete MUELLER line.

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(*Continued from page 22*)

Report of Minnesota Section Wartime Conference

Nicollet Hotel, Minneapolis, March 12–13, 1943

Because the meeting date was moved up from fall to spring, the closeness of our 1942 to our 1943 meeting caused some worry on the part of many members. However, since the attendance was 178, the largest ever recorded for the section, the worries were uncalled for. The large registration can be attributed to the excellent program and the presence of A.W.W.A. President, Dr. Abel Wolman. In addition to a gratifying attendance from section members, which included Minnesota, North Dakota, and Manitoba, there were guests from Iowa, South Dakota, Montana, and Wisconsin.

S. P. Kingston of Rochester, Dist. Engr. for the Minnesota State Board of Health, gave a paper on "Pollution of Water Supplies in Limestone Formation in Minnesota." Mr. Kingston based his discussion on his work in southeastern Minnesota and illustrated it with charts.

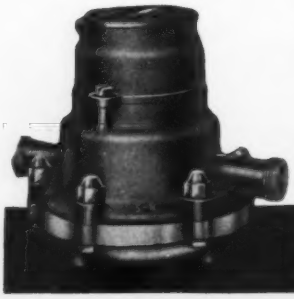
A paper on "Chemicals and Gases Found in Ground and Surface Waters in Minnesota" was read by George S. Michaelsen of the Minnesota State Board of Health. Mr. Michaelsen's paper dwelt on the causes and methods of removal, information valuable in helping correct certain problems which have been bothering many Minnesota water works men.

"Tank Painting and Racketeering in Minnesota" was covered by O. E. Brownell, Minnesota State Board of Health, who is also Chairman of the Tank Painting Committee. Mr. Brownell asserted that the answer to the tank situation is to specify certain paints which are known to be satisfactory and are available on the market. He recommended that a committee be appointed to draw up a standard contract for the protection of cities entering into contracts for tank repairs.

Aaron Kipp of the War Production Board discussed priorities, dwelling on the new U–1 priority which supersedes the P–46. He cited the importance of material inventories and their value to the WPB. He

(*Continued on page 36*)

NIAGARA IRON CASE WATER METERS



provide wartime copper conservation plus the time-proved Niagara design. They comply with victory-meter limitations. Works are interchangeable with American Bronze Case Meters.

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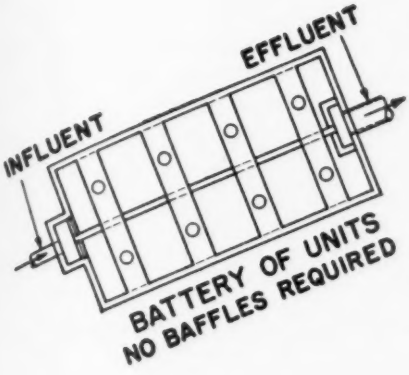
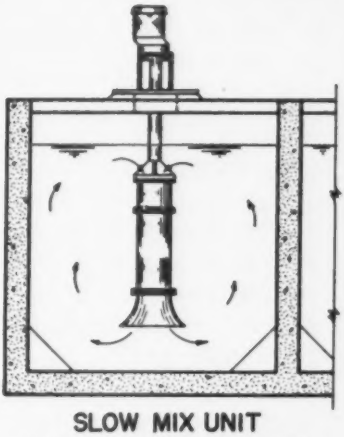
"American" Slow Mix Units





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IN TANK CROSS SECTION

The **"American" Slow Mix Units** consist of a direct or gear motor drive axial flow turbine rotating at very low speeds so as to move a large volume of water at a low velocity.

In operation, this slow moving body of water passes downwardly until its direction is changed at the bottom of the tank.

From here the recirculating water makes its way slowly to the top of the tank in the form of gentle eddy currents.

These slow moving eddy currents serve to create efficient contact action which results in agglutination and agglomeration of the finer particles into large flocs.

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THE AMERICAN WELL WORKS
AURORA ILLINOIS
MANUFACTURERS OF
Pumping,—Sewage Treatment,—
and Water Purification Equipment

(*Continued from page 34*)

commented very favorably on the work which Mr. Brownell was doing for the OCD in setting up the districts, which of course ties in with the inventory system. U. J. Seibert, Chairman of the Minnesota Section, told briefly of the part the section is playing in this work.

Maj. Wm. H. Cary Jr., Regional San. Engr., U.S. Public Health Service, OCD, Chicago, told of the defense measures and the school which will be held in Michigan in the near future.

Abel Wolman, President of A.W.W.A., spoke on the manpower situation, supplies, and the important part the water works people are playing. He feels that many mistakes have been made in most governmental departments but that they are gradually being corrected. He cited instances of technical and practical trained water works men being assigned to work in the army entirely foreign to their civilian practices. Dr. Wolman stated that probably within a week or ten days the War Manpower Com. would establish new policies because of the information given them by the A.W.W.A. This would help correct the evil.

J. Arthur Jensen gave a paper on "George W. Fuller and Water Supply Development." He emphasized that the paper would be an

(*Continued on page 38*)

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Hand Operated--sizes 2", 2½", 3", 4"
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Open Discharge or Force Pump
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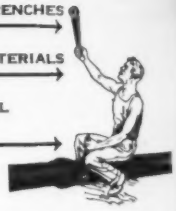

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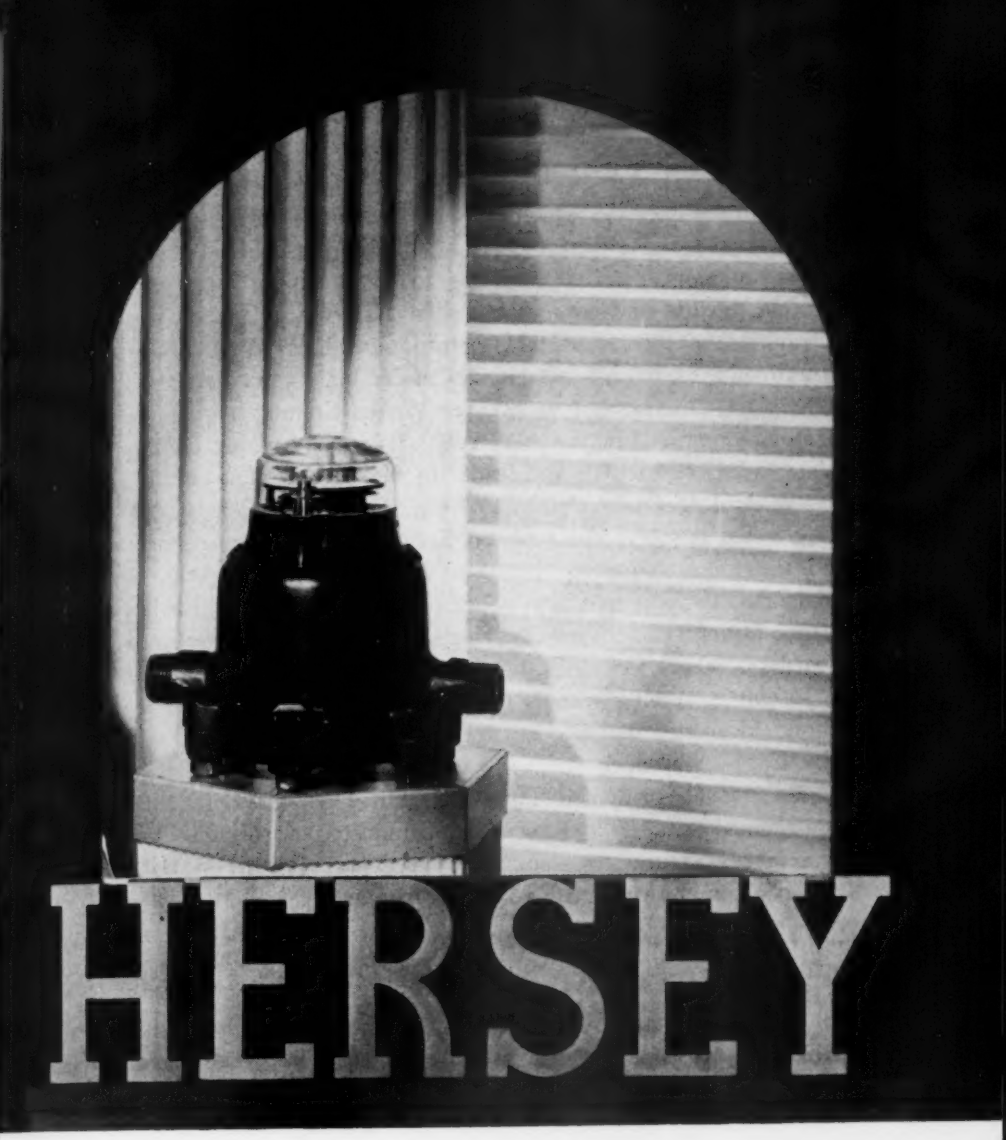

Water Works officials with long experience in handling water meters are finding the new Hersey Iron Case Meter with the Magni-Vision* All Glass Bonnet, an entirely satisfactory alternate for bronze case meters.

Full details in a new circular just issued.

HERSEY MANUFACTURING COMPANY

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*Patented by a Hersey engineer June 4, 1907

(*Continued from page 36*)

answer to the question which is asked by many—"What is the George W. Fuller award and why is it given?" Mr. Jensen's paper featured four "firsts" in pioneer activity relating to water supply history and development in the life of George W. Fuller. They are: the first modern type of rapid sand filter, put into operation at Little Falls, N.J.; the early experimentation with hypochlorites under his supervision at Louisville in 1896; first Chairman of the Water Works Standardization Council as it was first organized by the A.W.W.A., it later becoming the Committee on Water Works Practice; and leader in the development of the first edition of *Standard Methods of Water Analysis.*

At the business luncheon on Saturday, committee reports were read and the following were elected to Section posts for the coming year: Chairman, Frank Raab, Sen. Chemist & Bacteriologist, Fridley Softening Plant, Minneapolis; Vice-Chairman, Herbert S. Grove, Engr. & Supt., Board of Water Com., Stillwater, Minn.; Trustee (to fill out the term of Joseph E. Young who is moving to Kentucky), A. M. Kircher, City Engr., Mankato, Minn.; Trustee (three years), Wm. D. Hurst, Asst. City Engr., Winnipeg.

Mr. Raab presented Past-Chairman U. J. Seibert with the Past-Chairman's pin. The Executive Committee appointed R. M. Finch, Secretary-Treasurer for the coming fiscal year.

The conference concluded with a banquet.

R. M. FINCH
Secretary-Treasurer

A general strike against the City of Camaguey was held by the citizens of Camaguey, Cuba, in February, because government authorities failed to provide the population with water for four days. The water shortage started because of a breakdown of pumps, tanks and other equipment on the aqueduct. President Fulgencio Batista granted an appropria-

(*Continued on page 40*)

Filter Plant Equipment
COMPLETE LINE
Specializing in
Duplex Filter Bottoms
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Elevated Steel Tanks

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•DES MOINES

Check your tank's condition regularly—inside and out, have your local riggers and painters keep maintenance up to the mark—and your present tank will see you through!

For paint specifications and detailed recommendations, write—without obligation.

PITTSBURGH • DES MOINES STEEL CO.

PITTSBURGH, PA., 3424 NEVILLE ISLAND—DES MOINES, IOWA, 925 TUTTLE STREET

NEW YORK, ROOM 921, 270 BROADWAY . . . CHICAGO, 1228 FIRST NATIONAL BANK BUILDING

DALLAS, 1229 PRAETORIAN BUILDING . . . SAN FRANCISCO, 631 RIALTO BUILDING

SEATTLE, 1132 EIGHTH AVENUE, SOUTH

(*Continued from page 38*)

tion for its repair and ordered the Ministry of Public Works to furnish water immediately.

Commerce and industry were closed down, labor suspended work, transportation halted and children left the schools in protest. People hung out yellow flags to denote a disaster. It was necessary for soldiers and police to take over to prevent disorders. Three persons were slightly wounded during one protest manifestation.

Five billion gallons per day is the reported use of water at all War Dept. stations. Information from Geo. Sanford Holmes, Exec. Asst., Office of Technical Information of the War Dept., gives the following statistics:

Stations using purchased water	334
Stations having some type of water supply plant	710
Stations having water filtration plants	91
Number of filtration plants and treatment plants	144
Estimated water usage at all stations	5 bil. gpd.
Total capacity of filtration plants	191 mgd.

(*Continued on page 42*)

LARGE DIAMETER PIPE and FITTINGS
Including 48"

Acipco Cast Iron Pipe and Fittings are available in sizes including 48". Acipco Large Diameter Pipe are made by the Mono-Cast Centrifugal Process and conform to the latest A.S.A. standards.

AMERICAN CAST IRON PIPE CO.
BIRMINGHAM, ALABAMA
Sales Offices in Principal Cities

Filter Sand and Gravel

WELL WASHED AND CAREFULLY GRADED TO ANY SPECIFICATION.
PROMPT SHIPMENT IN BULK OR IN BAGS OF 100 LB. EACH.

Inquiries Solicited.

Northern Gravel Co.
P. O. Box 307, Muscatine, Iowa

AMERICA'S MOST AMAZING PUMP

PEERLESS HI-LIFT PUMP

Manufactured under R. Moineau's Patents, U. S. 1892217 and 2028407. Canadian Patents 353374. By exclusive license to Robbins & Myers, Inc.

...Unique chrome rotor literally squeezes water uphill.

FOR DEEP WELLS 4" OR LARGER
500 TO 3500 GALLONS PER HOUR
ASK FOR LITERATURE

Also available turbine and propeller types to pumping capacities up to 100,000 g.p.m.

PEERLESS PUMP DIV. • Food Machinery Corporation
Factories: Los Angeles, San Jose, Fresno, Calif. and Canton, Ohio

That They May Win . . .

WHILE we are safe at home, these men are going out to fight our battles. That they may survive — that they may win — it is our duty to keep them supplied with the best that America can produce, in planes, ships, tanks, and other equipment. And these things must be made of the best basic materials, among them copper, tin and nickel, the use of which has been willingly sacrificed in the manufacture of many parts of Trident Meters.

WE REALIZE that, as a result of the use of substitute materials, new problems arise. A frank discussion of any such problems you may encounter will be welcome, and should prove of mutual benefit.

NEPTUNE METER COMPANY • 50 West 50th Street • NEW YORK CITY

Branch Offices in CHICAGO, SAN FRANCISCO, LOS ANGELES, PORTLAND, ORE., DENVER, DALLAS, KANSAS CITY, LOUISVILLE, ATLANTA, BOSTON.

Neptune Meters, Ltd., Long Branch, Ontario, Canada.

55

Press Association Photo

(*Continued from page 40*)

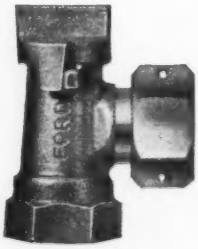
The U.S. Government has taken over the management of Hellige, Inc., manufacturer of water testing equipment, according to extensive press reports of March 11 and 12. Also reported was the internment of Dr. Paul A. E. Hellige, principal owner and manager of the concern, and a German citizen. Dr. Hellige was taken into custody on February 17 by the FBI which quoted him as favoring an Axis victory and having volunteered his services to the German Consulate in New York in 1940.

The Alien Property Custodian took over the plant upon the request of Army officials who said that production of water testers had fallen behind schedule after Dr. Hellige's arrest. Now Army technicians and all the employees who were with Dr. Hellige are co-operating to turn out the water testers at the speed maintained before Dr. Hellige's internment. It is to be noted that, paradoxically, while Dr. Hellige was at the plant, he kept production up to schedule.

Under the present management arrangement, the Army supplies the technicians and the Alien Property Custodian supervises the business aspects. The stockholders will continue to receive their share of the profits as they did under Dr. Hellige's active management, but the profits which would ordinarily go to him are withheld.

(*Continued on page 44*)

Ringstyle



The Ford RINGSTYLE Valve is an inverted key angle valve with meter coupling nut attached. For pit settings where meter is set on risers it makes a most convenient and satisfactory curb valve. Hundreds of thousands in service. Write for catalog and further information.

FORD METER BOX CO.
WABASH, IND.

When The Sirens SHRIEK

If Kupferle Fire Hydrants are on the job, all is well. Under any weather conditions, the precision manufacturing and fifty years of know-how make Kupferle Hydrants dependable. Plan now for better fire protection after the duration. Send for specification sheets.

JOHN C. KUPFERLE FOUNDRY CO.
ST. LOUIS

KUPFERLE
FIRE HYDRANTS

CAST IRON PIPE

Manufactured in Sizes 2" to 96"—
A large stock constantly on hand,
facilitating prompt shipment.

Flanged Pipe

Special Castings

Flexible Joint Pipe

Bell and Spigot Pipe

Warren Spun Centrifugally Cast Iron Pipe

Short Body B. & S. Specials

WF

Warren Foundry & Pipe Corp.

and

Warren Pipe Co. of Massachusetts, Inc.

Sales Offices
11 BROADWAY, NEW YORK, N. Y.
75 FEDERAL ST., BOSTON, MASS.

Works
PHILLIPSBURG, N. J.
EVERETT, MASS.

(*Continued from page 42*)

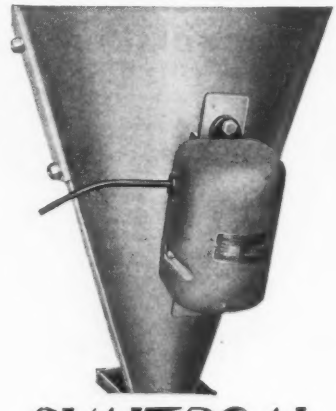
Report of Texas Water Works and Sewerage Short School

College Station, Texas, February 15–17, 1943

The Texas Water Works and Sewerage Short School held its twenty-fifth annual meeting at A. & M. College, College Station, Tex., on February 15, 16, and 17. The meeting this year was in the nature of a Wartime Conference, in order to inform the water and sewage plant operators and superintendents of all the newest information regarding priorities, mutual aid plan, substitutions for critical materials, decontamination, emergency sanitation measures, training of new personnel, and allied subjects and problems which have presented themselves as a result of the war.

In spite of curtailment of travel and increased activities in all of the municipalities, 260 city managers, water and sewage plant operators and superintendents from the municipalities, private industries and army reservations of the state registered at the Short School. Many new men who have entered the field of water and sewage plant operation to replace men called into the armed services were given special training. The registrants from the Eighth Service Command included both officers and civilian employees.

(*Continued on page 46*)



SYNTRON

ELECTRIC
"Noiseless" Vibrators

Flow chemicals freely through
Bins, Hoppers and Chutes
Catalog information available

SYNTRON CO. 428 Lexington Ave.
Homer City, Pa.

Meter Boxes
Meter Testers
Meter Yokes & Couplings

Valve Boxes
Service Boxes
Manhole Covers

Street Castings
Special Castings

H. W. CLARK COMPANY
Mattoon, Illinois, U. S. A.

ALCO

ELECTRIC WELDED STEEL PIPE

PLAIN LENGTHS OR SPECIALS

36" O. D. Piping Ready for Loading.

Special 60" O. D. Header.

Alco Electric Welded Steel Pipe Insures Against Leakage and Breakage

AMERICAN LOCOMOTIVE COMPANY

ALCO PRODUCTS DIVISION

30 CHURCH ST., NEW YORK, N. Y. DUNKIRK, N. Y.

(*Continued from page 44*)

The program included general sessions, for all registrants, a water works section, a sewage section, and special coaching sessions for those desiring to take examinations for license certificates. The coaching sessions were held each day by W. A. Bandy, Itinerant Instructor. Examinations were given for all grades of water and sewage plant operators at the conclusion of the meeting.

Among the speakers at the sessions were Major Schwab, who described the Gas Specialist School to be held at Loyola University, New Orleans; Luis Pachon, Bogata, Columbia, and Richard M. Sanchez, Lima, Peru, who spoke on the sanitation problems of their respective countries; C. C. Ruchhoft, U.S. Public Health Service, who gave a demonstration of tests for war gases and toxic contaminants in water; George W. Cox, who reviewed the water works and sewage fields in Texas and discussed new problems and new construction which have resulted from the war and from the establishment of many army reservations and defense plants in the state; and Dr. W. B. Russ, Regional Medical Officer of the OCD, who endorsed and encouraged itinerant schools and monthly district meetings as constructive phases of civilian defense.

A number of citations and awards were made. V. M. Ehlers, Ch. San. Engr., State Dept. of Health, Austin, who founded the Texas Water Works and Sewerage Short School twenty-five years ago and has been active in its functioning during the subsequent years, was presented with

(*Continued on page 48*)

Victor E. Arnold, Pres. of the Phoenix Meter Corp., Prince's Bay, Staten Island, N.Y., died at the Richmond Memorial Hospital on March 18 as a result of cerebral hemorrhage after a brief illness.

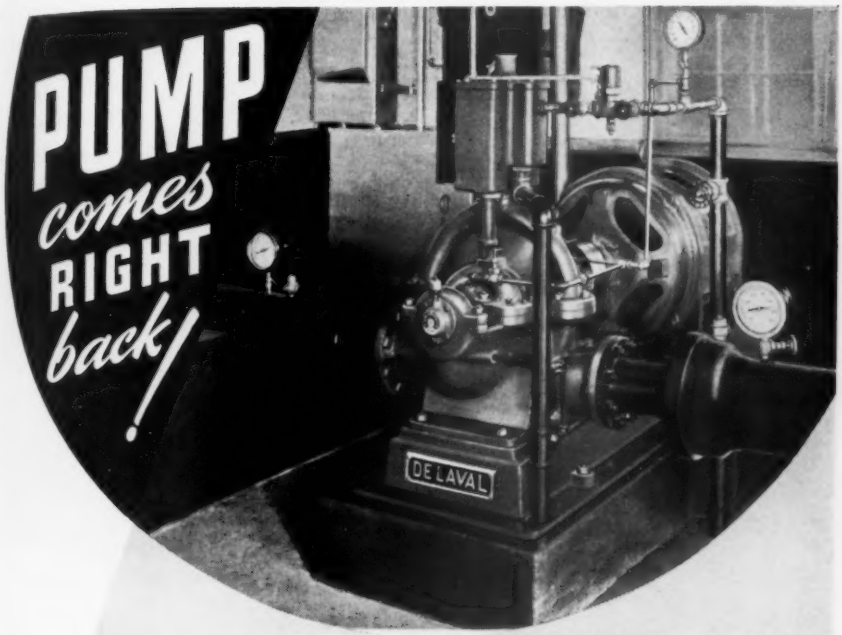
Born in Averill Park, N.Y., he had a business career including association with the Scranton, Pa., Water Co., the Pittsburgh Meter Co., the Pittsburgh Equitable Meter Co., and his service as Pres. of the Phoenix Meter Corp.

THE COAGULANT
THAT CUTS COSTS

Write today for actual case histories
of water plants now using Ferri-Floc.

TENNESSEE CORPORATION
Ferri-Floc
FERRIC SULPHATE

TENNESSEE CORPORATION
ATLANTA, GEORGIA LOCKLAND, OHIO



Pump fitted with De Laval submerged suction priming system; 1100 g. p. m. against 245 ft. at 1750 r. p. m.

If the three-quarter-inch corporation cock on the suction pipe of the pump illustrated above is opened wide, delivery of water ceases, but is resumed again within one minute after the cock is closed, the pump being at once reprimed by the

DE LAVAL *SUBMERGED SUCTION* PRIMING SYSTEM

Were the air inleakage too great for the priming system to handle, the pump would automatically be shut down and could not be started again until the fault had been corrected.

With the De Laval Priming System the pump cannot be started unprimed.

Danger of surges or water-hammer reaching the pump casing is eliminated or minimized.

The pumping unit can be started or stopped at any time, from a remote control point if desired.

Proper adjustment of packing glands is simplified, as pressure is not admitted to the pump casing and suction line.

Ask for Publication P-3224.

DE LAVAL *Steam Turbine Co.*
TRENTON, N. J.

(*Continued from page 46*)

a gold watch by its membership. Mr. Ehlers won the Fuller Award for the Southwest Section in 1941.

The Water Works Honor Roll for the year read as follows:

Highest percentage of population connected to public water supply
Brownwood
Most attractive water plant ..... Jacksboro
Best bacteriological analysis record ..... Fort Stockton
Best laboratory for control ..... Laredo
Completing the greatest improvement to its water treatment plant
Wichita Falls

Wichita Falls received a loving cup which accompanies the honor for which it was cited.

The Sewage Honor Roll for the year read as follows:

Highest percentage of population connected to a water flush system
Clifton
Greatest ratio of new connections during the year ..... Killeen
Most attractive sewage plant ..... Crystal City

(*Continued on page 50*)

Only in this Compound

CAN YOU GET ALL THESE ADVANTAGES!

1—INGOT FORM—unaffected by water; easy to handle, ship and store.
2—CHEMICAL COMPOSITION CANNOT CHANGE—Correctly mixed at our plant. Still correct when it reaches your job.
3—NEEDS NO CAULKING or deep bell holes.
4—MELTS, pours and sets QUICKLY.
5—LOWER INITIAL LEAKAGE that seals quickly, permitting immediate clearing up.
6—PERMANENTLY TIGHT JOINTS—with higher resistance to Mechanical and Thermal shock.
7—ECONOMICAL on labor and in performance.
8—HELPS CONSERVE LEAD, a strategic war metal.

You want every one of these advantages.
[You'll get them all *only* in

Tegul-

MINERALEAD

for JOINTING BELL & SPIGOT MAIN

THE ATLAS MINERAL PRODUCTS COMPANY of PA.
Mertztown • Pennsylvania

My lovely Tablecloth

HERE'S THE CULPRIT —*corrosion. Calgon treatment controls corrosion, eliminates "red water".*

IT'S blue Monday with a vengeance for this lady. No woman will take damage to her treasured fabrics without giving the water company an earful. And what will you tell her? Nothing you can say will restore the whiteness to her fine linens.

But you can give her some hope that "red water" will soon be a thing of the past. In fact, hundreds of cities have already eliminated this nuisance with simple Calgon treatment.

Here's how it works. "Red water" is usually caused by corrosion from soft water or by precipitation of dissolved iron from well water. Calgon controls both kinds.

A treatment of 1 to 5 ppm. Calgon maintains a thin protective film over pipe metal and metal oxides throughout the system. This reduces the attack of oxygen so effectively that corrosion ceases to be a serious problem and "red water" is eliminated.

"Red water" from wells containing dissolved iron can be eliminated with similar treatment. In this case, however, Calgon prevents the precipitation of dissolved iron so that no heavy accumulations occur. "Red water" doesn't get a chance to form. This eliminates the need for expensive iron removal equipment.

Calgon treatment can be started immediately. The cost is extremely low. The only apparatus needed is a device to assure correct feeding. Write for samples and complete information which also shows how Calgon* prevents scale and stabilizes water after lime-soda softening.

Calgon is the registered trade-mark of Calgon, Inc. for its glassy sodium phosphate products.

Calgon solves 4 water works problems

1. **Prevention of scale** from hard, high-bicarbonate waters. Calgon, added at the plant, prevents scale formation in mains, meters and hot-water heaters, throughout the system.

2. **Corrosion control**—Calgon forms a thin protective film on metals and metal oxides at pH values of 5.0 and higher. This reduces the attack of oxygen to such an extent that corrosion ceases to be a problem.

3. **Prevention of "red water"** — Calgon prevents the precipitation of dissolved iron. Thus "red water," either from iron initially present in well water, or from corrosion, can be eliminated.

4. **Stabilization of water** following lime or lime-soda softening. Calgon's ability to prevent precipitation of calcium carbonate stabilizes water to the ends of the system.

HAGAN HALL BUROMIN CALGON

calgon, inc.

A SUBSIDIARY OF HAGAN CORPORATION

HAGAN BUILDING PITTSBURGH PA

(*Continued from page 48*)

Best laboratory for control ..... San Antonio
Most advantageous use of effluent:

(1) for irrigation ..... San Angelo
(2) for industrial use ..... Corpus Christi
(3) for disposal of sludge ..... Kilgore

Completing the greatest improvement to its sewage treatment plant Corsicana
Sewage plant producing the best sewage effluent during year.... Cleburne

A loving cup and a plaque accompanied the citations received by Corsicana and Cleburne.

A plaque was awarded to the Panhandle Water and Sewage Association for having the greatest number of members present who had traveled the most miles to attend the school. Honorable mention for attendance was given to the Trinity-Neches-Sabine Water Works and Sewage Association.

George J. Rohan, Supt. of Water Works, Waco, A.W.W.A. Director 1940–42, and now Secretary-Treasurer of the Southwest Section, and Albert R. Davis, Supt. of the Water Dept., Austin, and now in the armed services, were made honorary life members.

New officers of the Texas Division, Southwest Section, A.W.W.A., were elected as follows:

President ..... Roy Matthews, Albany
First Vice-President ..... W. F. Hicks, Paris
Second Vice-President ..... W. N. Joiner, San Marcos
Third Vice-President ..... Joe B. Winston, Houston

(*Continued on page 52*)

Jack C. Lindsey, Water Operations Supt., Water Dept., Seattle, Wash, died in Seattle on February 11. William McFadden has been appointed to the position left open by Mr. Lindsey's death.

ZECO GREENSAND ZEOLITE

Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

ZEOLITE CHEMICAL CO.
90 WEST STREET **NEW YORK, N. Y.**

IMPORTANT

Public Health must be maintained!

The necessity of maintaining public health in war time is self-evident. Municipal officers in charge of water purification and sewage disposal have a vital responsibility in guarding the nation's health, that should not be underestimated as a contributing factor to final victory.

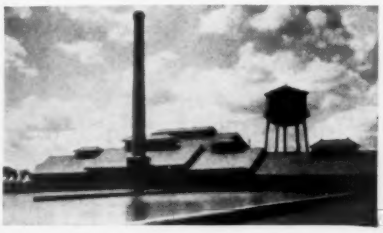
However, the problems of maintaining public health are *becoming increasingly difficult in the face of material shortages and transportation handicaps.* In order to ease this situation in regard to *Aluminum Sulfate* as much as possible, won't you help us by observing the following simple rules?

❶ Order "maximum" cars to conserve transportation space and reduce the haulage necessary to serve your needs.

❷ Place your orders as far ahead as you can so that we may schedule our production on an efficient basis.

Why Most American Cities Prefer General Chemical Aluminum Sulfate

General Chemical Aluminum Sulfate is an especially developed "Alum." High quality and constant uniformity have given it *a time-tested* reputation among water works engineers and sewage plant operators.



★ **FOR WATER WORKS**

1. Makes water crystal clear.
2. Longer filter runs are obtainable.
3. Is economical, used properly will conserve chlorine supplies . . . because it does not require oxidation to make it effective.
4. Superior in tests against other coagulants.
5. High in quality, its constant uniformity can be counted upon.

★ **FOR SEWAGE PLANTS**

1. Clean, easy to handle and economical to use.
2. Simple application, requires only low cost feeding apparatus and minimum attention.
3. Clear, colorless effluents are possible.
4. Precipitated sludge digests readily.
5. Treated digested sludge dries quickly, without odor.

GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK, N. Y.

Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh Providence (R. I.) • St. Louis • Utica (N. Y.)

Pacific Coast Technical Service Offices: San Francisco • Los Angeles

Pacific Northwest Technical Service Offices: Wenatchee (Wash.) • Yakima (Wash.)

In Canada: The Nichols Chemical Co., Ltd. • Montreal • Toronto • Vancouver

(*Continued from page 50*)

Fourth Vice-President ..... R. P. Reagan, Gainesville
Secretary ..... V. M. Ehlers, Austin
Asst. Secretary-Treasurer ..... Mrs. Earl M. Goodwin, Austin

On February 8–13, prior to the Short School, a special water works and sewage laboratory course was offered at A. & M. College. Each of the district associations was permitted to select one member of its group to attend the course. Those who completed it were: W. A. Bandy, College Station; T. D. Brown, Mineral Wells; C. J. Clark, Beaumont; C. E. Collins, Kilgore; J. C. Cotton, Jacksonville; L. D. Cunningham, Big Spring; Miss Loreta Gallard, Corsicana; B. N. Gardner, Amarillo; W. W. Gorham, Wichita Falls; F. J. Joyce, Mt. Vernon; G. H. Nelley, Brownwood; and L. E. Otts, Wichita Falls.

Mrs. Earl M. Goodwin
Asst. Secretary-Treasurer

The Army-Navy Production Award for high achievement in the production of chlorine, synthetic ammonia, caustic soda, high test calcium hypophlorite, sodium methylate, and other chemicals that are vitally needed for the nation's war effort, has been presented to the Niagara Falls plant of the Mathieson Alkali Works (Inc.).

"These products," said Col. Harry A. Kuhn, Office of the Chief, Chemical Warfare Service, Washington, D.C., who made the award, "are just as vital to the war as are the tanks, the airplanes, the explosives, the gasoline and the synthetic rubber in which they are used. The chlorine which made possible the pure water furnished our troops on Guadalcanal played just as vital a part in winning that battle as the high explosive shell that blasted the Japs from their rat holes."

Almost without exception, all of the chemicals being produced by the Mathieson plants at Niagara Falls, Saltville, Va., and Lake Charles, La., are needed for war purposes or for essential civilian services.

Besides chlorine, ammonia is essential in making many wartime products, including smokeless powder, TNT and other high explosives, petroleum products, pharmaceuticals, plastics and casehardened metal parts for planes and other war equipment. Caustic soda is essential in refining gasoline and lubricants, in making rayon for parachutes and heavy-duty military tires, in processing textiles and in reclaiming scrap rubber.

COOK Well Strainers
A reciprocal relation, the life and functioning of the one depending much on the other.
A. D. COOK, INC.
Lawrenceburg - Indiana
COOK Deep-Well Turbine Pumps

NEWS OF THE FIELD

Water works maintenance in wartime must strike an intelligent balance between the recognized safe and continuous replacement policy of peacetime and the policy of "Save, Stretch and Share" that makes the utmost of everything needed available to the direct war effort.

Thus, a year ago, when J. A. Krug addressed the A.W.W.A. Conference in Chicago, he advocated a policy of restricted maintenance, of deferment of additions to plants which were not immediately related to the war effort, of abstaining from use of critical materials to whatever extent was practical in the public interest.

The water works men who heard that adress took it to heart in their operations. They passed the word along to their neighbors. The manufacturers co-operated by spreading the "Save Materials" slogan.

When the record of 1942 was complete, we found that water works men had saved. They had used far less materials than the terms of the P–46 order made it possible for them to buy and use.

On the other hand, by the end of 1942, it became evident that material and productive capacities to manufacture equipment related to water works were available to a greater degree than the field was using them. In other words, pipe, valves, hydrants, etc., could be produced but the consumers had gotten so schooled in deferment that they were not using what was available.

Then came a shock when the new order U–1 was issued. It restricted the ability of water works to maintain and repair according to the pattern they had cut for themselves in their patriotic fervor to play the game with Krug, Gorman and the war effort as a whole.

When the full impact of the order became evident, it appeared that the restrictions were dangerous. They cut so deep as to jeopardize ability to meet emergency. The administrator of the order was so advised by a group of water works executives who met in Washington on April 2. The facts were plainly stated. The evidence is in. No counter evidence has been shown. We now await the restatement of the order that will help water works to steer clear of the danger zone in plant upkeep. We are ready to serve war industry today and as long as the war lasts. We need the well-considered co-operation of the Office of War Utilities to the end that an allowance of materials in keeping with their general availability is made to no other ends than that of keeping the water flowing to the plants that produce war materials and to the workers who are employed in those plants.
—Harry E. Jordan, *Secretary, A.W.W.A.*

(*Continued on page 2*)

(*Continued from page 1*)

J. A. Krug has been named to the third ranking post in the WPB. He is well known to the water works field through his extensive administrative work in the WPB program for conservation of critical materials and maintenance of utilities and through his speech at the A.W.W.A. Conference at Chicago last year. He has been serving as Director of the Office of War Utilities in the WPB.

By an order signed by Charles E. Wilson, Executive Vice-Chairman of WPB, Krug was made Program Vice-Chairman. In this position he has authority to review and approve all proposed military, foreign and civilian production programs to keep them from conflicting with one another and consistent with the nation's production potentialities. He will formulate and determine policies and methods for allocating or distributing American resources, and also will be responsible for scheduling of production and deliveries and controlling inventories. He will collect and analyze requirements for food and petroleum products and will serve as the principal link between the WPB and Lend-Lease, Board of Economic Warfare, Solid Fuels Co-ordinator, Agriculture Dept., and Office of Defense Transportation.

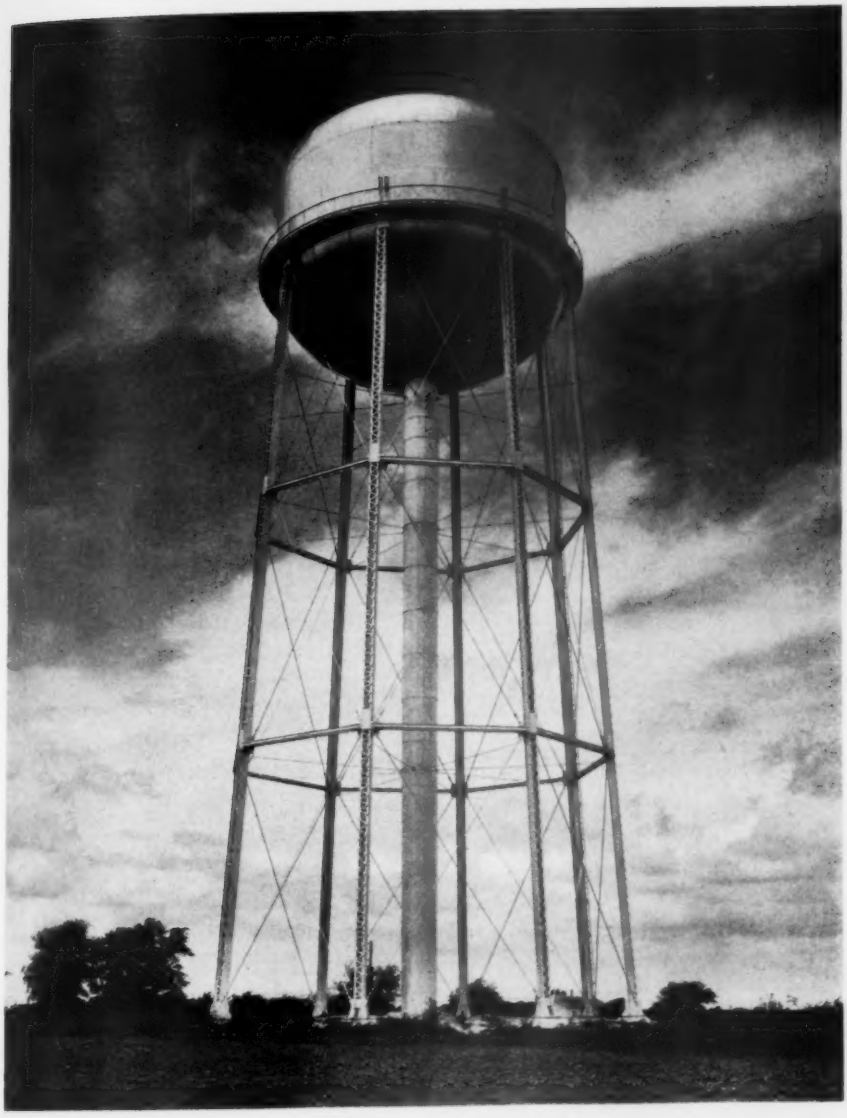
This order places Krug second only to Wilson and Donald Nelson, WPB Director. Krug is in effect successor to Ferdinand Eberstadt, but Krug has even broader powers than Eberstadt had as Vice-Chairman when Donald Nelson dismissed him in February after differences of opinion became sharp over the scheduling of several military production programs. At the time, Nelson assigned most of Eberstadt's duties to Wilson, but Krug was immediately given two of Eberstadt's posts, those of Vice-Chairman in Charge of Materials and Chairman of the Requirements Committee.

(*Continued on page 4*)

Clarence Bahlman, Supt. of Cincinnati's Filtration Plant, died on April 6 at Bethesda Hospital in Cincinnati after a brief illness. He was 61.

He was a graduate of the Univ. of Cincinnati and had entered the city's employ as Chief Chemist for the Board of Health in 1911. In 1918 he was made Bacteriologist and was in charge of water purification. This position was later entitled Supt. of Water Purification. He was a member of the American Chemical Society and was an Active Member of the A.W.W.A. since 1922.

Edmund Evans, formerly assistant to Mr. Bahlman, had assumed his duties. He entered the city's employ in 1925 and was especially trained for the job; therefore, according to press reports, there will be no civil service examination for the position, although Mr. Evans' assistant will be chosen by civil service.



HORTON elevated steel tanks like this are providing gravity water pressure to meet peak loads in municipal waterworks systems all over the country. Check weaknesses in your system now and correct them when tanks are again available.

CHICAGO BRIDGE & IRON COMPANY

BIRMINGHAM CHICAGO WASHINGTON
PHILADELPHIA NEW YORK CLEVELAND
SAN FRANCISCO HOUSTON TULSA

(*Continued from page 2*)

Some significance has been attached to Krug's rapid rise in the WPB because, instead of being an "outsider," he was an "insider" or government man, having come to WPB from the job of Power Manager for TVA. In that post, he had negotiated directly with Wendell Willkie in TVA's purchase of power companies controlled by Commonwealth & Southern, the largest deal involving $80,000,000. Krug is reported to enjoy the complete confidence of Army and Navy officials on production matters.

Alexander Goetz, Director of Research, Rare Metals Inst., California Inst. of Technology, Pasadena, Calif., has, according to press reports, perfected a combination of colloidal materials for precipitating sea water so that it becomes drinkable. What this will mean to shipwrecked sailors can easily be imagined. "The process is as simple as pouring water from one sea boot to another," Dr. Goetz reports. A container is filled with sea water, which is treated, allowed to stand for two hours, and then poured into another vessel, leaving behind poisonous materials which have been precipitated out. It is further clarified in the second vessel, and then ready to drink. Enough of the formula, which is a military secret, to treat two quarts of water is packed in a waterproof container about the size of a cigarette package.

Corp. Arthur J. J. Dimick, U.S. Marine Corps, formerly of the Industrial Chemical Sales Div. of West Virginia Pulp and Paper Co., has won the Silver Star "for conspicuous gallantry and intrepidity in action against the enemy in the British Solomon Island on Nov. 3, 1942."

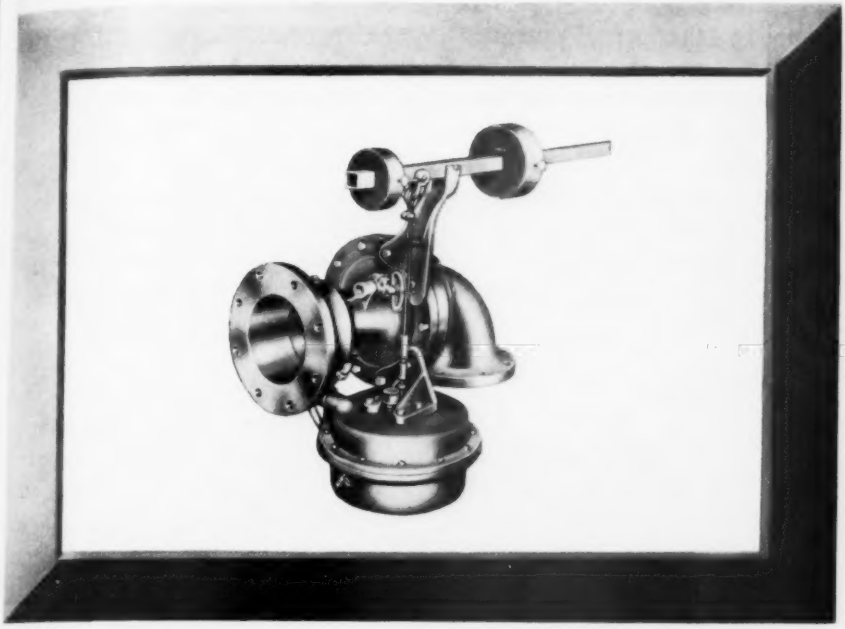
The official citation, signed by Admiral W. F. Halsey, goes on to say that:

"During the attack on hostile positions at Guadalcanal when the advance of the company to which he was attached was threatened by close

(*Continued on page 6*)

Edgar K. Wilson, Cons. Engr. to the Pitometer Co. of New York, died at the age of 64 at his home in Upper Montclair, N. J., on March 31. Due to ill health, he retired from the positions of Treas. and Chief Engr. for the Pitometer Co. in 1942, but stayed with the concern as Cons. Engr.

He was a graduate of Maine Univ., and before joining the Pitometer Co. in 1912, he had been Asst. Engr. in building the Panama Canal, Resident Engr. for the Portland Water Dist., and Cons. Resident Engr. for the Philadelphia and Westmoreland Railroad in 1909–12. He was a member of the A.S.C.E. and Active Member of the A.W.W.A. since 1926, and had served as Chairman of the New York Section of the A.W.W.A.



Portrait of **"A MIND AT EASE"**

Simplex "S" Controllers have established a reputation for long, dependable service that is taken for granted by thousands of design and operating men in plants all over the country.

We receive many comments from new as well as old users telling us of the steady, behind-the-scenes job our Controllers, Fluid Counterweights, and Clear Well Shut-Offs are doing to maintain peak efficiency for overburdened operating staffs in plants whose capacities are often being taxed to the very limit.

Certainly we are pleased, but not altogether surprised, since we know we have a fine line of control equipment, designed and proved as the right answer to your flow control problem.

The recently published Simplex Bulletin 250 gives clear-cut specification data that is worth filing for ready reference. Your copy will be sent immediately without obligation.

SIMPLEX VALVE & METER COMPANY
6784 UPLAND STREET, PHILADELPHIA, PENNA.

(*Continued from page 4*)

range fire from an enemy 27 mm. gun, Corp. Dimick, with complete disregard for his own safety, in the company of two other marines, rushed forward in the face of heavy enemy fire, captured the gun by destroying the hostile gun crew, and placed that weapon out of action, thereby permitting the remainder of his company to carry its objective without undue losses."

Prior to his enlistment in the Marine Corps in December 1941, Dimick worked out of the Cleveland office of Industrial Chemical Sales Div., calling on the water plants throughout Ohio, western Pennsylvania, western New York, and western West Virginia. He was recently tendered a reception by his office while on furlough from the U.S. Naval Hospital, Oakland, Calif.

F. C. Dugan, who had held the position of Director, Bur. of San. Eng., Kentucky State Dept. of Health, since February 1921, is now serving as Major, Corps of Engineers, stationed at the School of Military Government at Charlottesville, Va. Mr. Dugan received a B.C.E. in 1910 and C.E. in 1913 from the Univ. of Kentucky. Following graduation, he served as Asst. and Resident Engr. on water and sewage treatment plants

(*Continued on page 8*)

SHELDON

LABORATORY FURNITURE FOR CONTROL

★ Sheldon does more than manufacture a complete line of Laboratory Furniture. Experienced Sheldon Planning and Installation Engineers will help you plan efficient facilities for laboratory control. They also will assist you in selecting and installing furniture which will meet your needs efficiently and economically.

Write today for Catalog. Ask that our Engineers call

E. H. SHELDON & CO.

MANUFACTURERS OF WOOD & METAL LABORATORY FURNITURE

738 NIMS ST., MUSKEGON, MICHIGAN

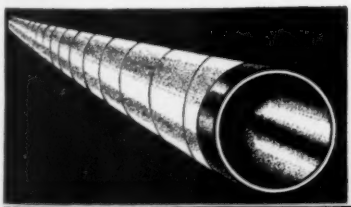
THERE WILL BE A TOMORROW

but let us plan for it today!

HILL-HUBBELL

Come to the A.W.W.A. Conference Cleveland June 15-18

has already laid its plans for post-war activity. Then when gas, oil and waterworks engineers design permanent pipe lines, HILL-HUBBELL factory processed Steel Pipe Protection will be available—and better than ever.



HILL-HUBBELL Steel Pipe Protection is a scrupulous mechanical application job. Our name on the imprinted kraft wrapping is your assurance of honest workmanship.

GENERAL PAINT CORPORATION

HILL, HUBBELL & CO. • Division • Cleveland, Ohio

• EXPORT OFFICE: SAN FRANCISCO, CALIFORNIA, U. S. A. •

(*Continued from page 6*)

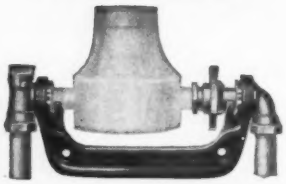
in Cincinnati and Lima, Ohio, and in May 1917 was commissioned in the United States Army. He served overseas as Capt. of Engrs. and returned to the States in June 1919. Maj. Dugan holds membership in the A.W.W.A., A.S.C.E., American Military Engineers, Engineers and Architects Club of Louisville, and a Fellowship in the A.P.H.A.

R. R. Harris, who had been principal Asst. Engr. for fourteen years, succeeded Maj. Dugan. Harris is a graduate of Iowa State Univ., receiving a B.S.C.E. in 1927 and a Master of Public Health degree from Harvard in 1939. He was commissioned a Captain in the Sanitary Corps and reported to Washington on March 8, 1943. He was assigned to the Office of the Co-ordinator of Inter-American affairs and is now stationed at Managua, Nicaragua. He had been with the State Dept. of Health for 13 yr.

C. M. Davidson, who succeeded Capt. Harris, holds a B.C.E. from the Univ. of Kentucky and was employed as Asst. San. Engr., State Dept. of Health, from 1933 to Sept. 15, 1939, at which time he was appointed San. Engr. and Dir. of the Bur. of Food and Sanitation of the Louisville and Jefferson County Health Dept. He is a member of the A.P.H.A. and Dir. of the Conference of Municipal Public Health Engineers.

(*Continued on page 10*)

FORD YOKES



With the trend more strongly than ever toward greater accuracy and more frequent testing, the easy and trouble-free accessibility of a water meter set in a Ford Yoke makes this proven and perfected setting device most worth while.

Catalog sent for the asking.

FORD METER BOX CO.,
WABASH, IND.

Excels Lead

in PERFORMANCE and ADVANTAGES

. . . and helps conserve that strategic war metal!

Tegul-MINERALEAD delivers joints that stand up under extraordinary punishment . . . and seal tight in much less time.

This compound weighs 1/5th as much as lead (saving in handling and shipping) and goes 3 times as far.

Its 10-lb. ingot form adds economies in shipping and handling, is impervious to moisture . . . and its composition cannot be upset.

Joints of *Tegul*-MINERALEAD have much higher resistance to mechanical and thermal shock. Because of these and still other advantages, you will be served better by

Tegul MINERALEAD

in your BELL & SPIGOT MAIN JOINTING

For more information, write

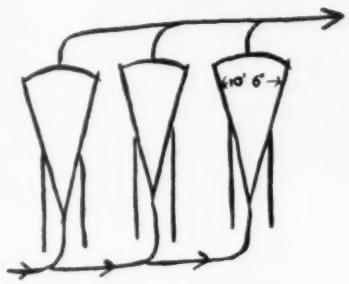
THE ATLAS MINERAL PRODUCTS COMPANY of PA.
Mertztown • Pennsylvania

SOFT, CLEAR WATER IN 8 MINUTES BY NEW SPACE-SAVING METHOD

FIELD REPORT

THE PERMUTIT COMPANY, NEW YORK, N. Y.

Equipment: "SPIRACTOR" COLD LIME WATER SOFTENER
Installed at: [redacted]



Note small area for daily capacity of 3,000,000 gallons!

This plant has more than met specifications. Detention time is only 8 minutes. There is no sludge. Softened effluent is so clear that filters have little to do. Engineer much pleased at fine results and simplicity. Simply turned on the water and the chemicals—no time wasted in getting started.

WATER ANALYSIS	RAW WATER	SPIRACTOR EFFLUENT#
Total Hardness	180	40
Calcium Hardness	172	32
Alkalinity A (Methyl Orange)	180	40
Alkalinity B (Phenolphthalein)	0	20
Free Carbon Dioxide	20	0

#Before filter

Write for free bulletin to The Permutit Co., Dept. G2, 330 West 42nd St., New York, N. Y. In Canada: Permutit Company of Canada, Ltd. . . Montreal . . . Toronto . . . Winnipeg . . . Calgary

PERMUTIT WATER CONDITIONING HEADQUARTERS

(*Continued from page 8*)

Frank Woodbury Jones, member of the firm of Havens and Emerson, Cleveland, has succeeded W. W. Towne, of Columbia, Mo., as Sanitary Engineer of the Fifth Civilian Defense Region. Capt. Towne is in the Sanitary Corps assigned to Camp Lee, Va.

Clifton Bovee, Chem., San. Eng. Div., Bureau of Water Works and Supply, Los Angeles, is now a 1st Lieutenant in the Sanitary Corps, stationed at Camp Barkeley, Tex.

W. J. O'Connell Jr. and L. L. Carter now have their activities organized as "Technical Consultants," 525 Market St., San Francisco. The firm's particular interest is consultation on the biological, chemical and other technical problems arising from use of water. Perhaps best described as biological engineering, the firm's work is chiefly concerned with industrial wastes, biological processes, and oil, water and waste treatment. Concentrating on phases that may have bearing on public health, there is a vast field in the development of land disposal of wastes from distilleries of all sorts and steel and paper mills, in taste and odor problems

(*Continued on page 12*)

SAVE FOR DEFENSE

EVERYWHERE Americans are being asked to "SAVE FOR DEFENSE." Water works superintendents, engineers and public officials can do more in this connection by investigating the National Method of water main cleaning. This method restores the carrying capacity of pipe to at least 95 per cent of that of new mains, thereby eliminating the necessity for purchase of new mains. Aside from this the National Method makes possible lower pumping costs, greater delivery, reduced insurance rates and clean water.

Now is the time to do your part—SAVE FOR DEFENSE

National Water Main Cleaning Co.

30 Church St., New York, N. Y.

BRANCHES

115 Peterboro St., Boston, Mass.
910 William Oliver Bldg., Atlanta, Ga.
7103 Dale Ave., St. Louis, Mo.
406 Florida Theatre Bldg., Jacksonville, Fla.
3812 Castellar St., Omaha, Neb.
205 West Wacker Drive, Chicago, Ill.
501 Howard St., San Francisco, Calif.
2028 Union Ave., Montreal, Canada

ASARCO Type K Tube-Loy and SUPERSEAL Flared Fittings for Main to Meter Water Service

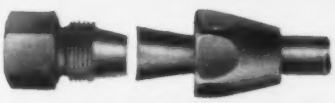
Have you been stymied getting materials for Main to Meter Water Service?

Here's your answer . . . ASARCO Type K Tube-Loy and SUPERSEAL Flared Tube-Loy Fittings. This combination, made of less critical materials, offers the advantages of easy handling for fast installation, long life, leak-proof connections and trouble-free service PLUS *availability right now.*

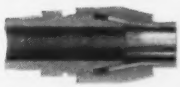
For complete information and descriptive catalog on SUPERSEAL Flared Tube-Loy Fittings and ASARCO Type K Tube-Loy, call your nearby GRINNELL BRANCH or write Grinnell Company, Inc., Executive Offices, Providence, R. I.

GRINNELL

WHENEVER **PIPING** IS INVOLVED



SUPERSEAL Flared Tube-Loy FITTINGS



- ★ Made of malleable iron, electro galvanized.
- ★ Long, 10° tapered cone provides greater seating area for tubing flare . . . forms a leak-proof joint unaffected by vibration.
- ★ Three types available – tube to inside iron pipe thread . . . tube to outside iron pipe thread . . . tube to tube.
- ★ Specially designed for use with

ASARCO Type K TUBE-LOY

- ★ Tubing extruded from a lead alloy . . . has all of lead's unexcelled resistance to corrosion.
- ★ Installation is much easier than with other available materials.
- ★ Nominal sizes – ½", ¾", 1".

(*Continued from page 10*)

in canneries, and in the control of micro-biological growths and interrelationships of the chemistry of water in wet process operations.

R. G. McCall, formerly Asst. San. Engr. with the West Virginia State Health Dept., has been commissioned Lieutenant in the Sanitary Corps and is now stationed at Station Hospital, Camp Miles Standish, Taunton, Mass.

Guy M. Tate, formerly San. Engr. for the Jefferson County Board of Health, Birmingham, Ala., is now on active duty as Captain with the U.S. Engineers, Fort Belvoir, Va.

Alva A. Taylor, Area Planning Engr., Federal Public Works Reserve, Long Beach, Calif., has been commissioned Lieutenant j.g. in the U.S. Naval Reserve.

Capt. George A. McBride, formerly stationed at the Chicago Ordnance District Office, is now assigned as Asst. Exec. Officer of the Maintenance Branch at the Detroit Tank Automotive Center. While Chemical Engr. for Infilco, Inc., before this Global War, he was a reserve officer in the Ordnance Dept.

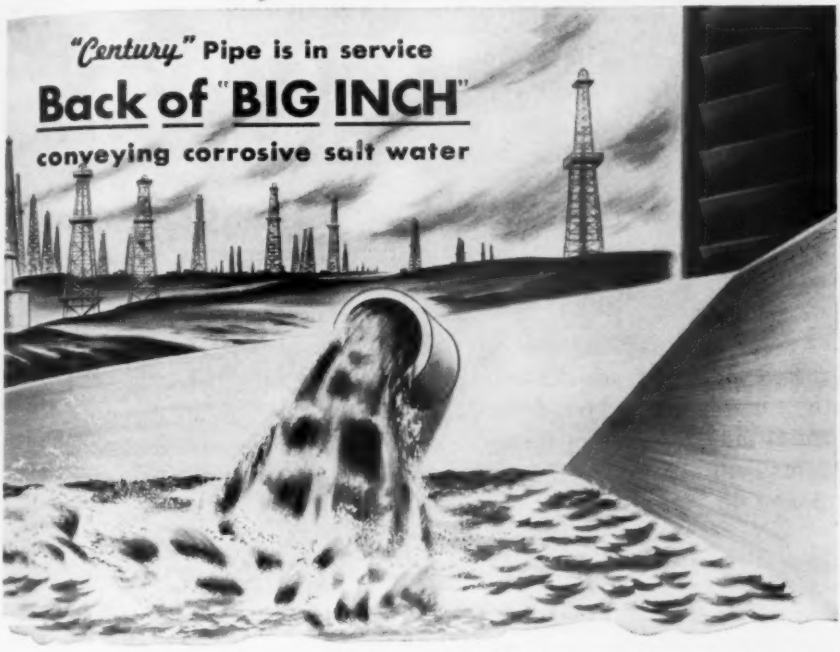
E. T. Zentner, formerly associated with the Univ. of Texas, is now in charge of pilot plant development on an organic chemistry research project at the Virginia Carolina Chemical Co. Research Laboratory, Carteret, N.J. While at the Univ. of Texas, Dr. Zentner worked on the design of hydraulic extrusion presses and was associated with Hydropress, Inc. Previous to that he did colloidal chemical research at Permutit Co., New York. He came to this country in 1939 from Czechoslovakia, where he had developed the "Spiractor," a water softener, the first having been put into operation in Czechoslovakia in 1937. Dr. Zentner received a chemical engineering degree from the Univ. of Vienna in 1932 and a doctorate in chemical engineering in 1937.

Rudy P. Lowe, formerly Vice-Pres. and Chief Engr., has been elected Pres. of Proportioneers, Inc., Providence, R.I. Mr. Lowe is a graduate of Ill. Inst. of Technology, 1922, and served in Chicago as consulting engineer in the building industry for the eight subsequent years. He then entered the water works field as consulting engineer, and in 1932 joined the Proportioneers firm.

Ray C. Sparling, Pacific Coast Sales Mgr., R. W. Sparling Meter Co., Los Angeles, has received a commission as Lieutenant j.g. in the Navy and has reported for duty at New York.

(*Continued on page 14*)

Looking ahead with Asbestos



Come on, "Big Inch!" The whole nation's pulling for you. Hurry those millions of barrels of oil needed for our Fighting Forces. Help us get this war won—fast!

When completed, "Big Inch"—the country's most famous pipe line—will take most of the output of 25,000 or more wells in the East Texas oil fields... Back of "Big Inch," Keasbey & Mattison's "Century" Pipe is playing an essential part.

Here's how. Highly corrosive salt water, when present in oil deposits, must be separated from the oil as it flows from the wells, and piped away so that it does not ruin surface soil or contaminate streams. It is finally carried to injection points, where it is returned to the oil deposits to maintain needed hydrostatic pressure. Thousands of feet of K&M "Century" Asbestos-Cement Pipe are doing this vital job today and will continue to give years of trouble-free service because it is immune to the destructive action of salt water.

Now, as K&M's wartime obligations are being fulfilled, more of "Century" Pipe is becoming available to you for government-approved work. If maintenance comes foremost in your estimation, "Century" Pipe's resistance to corrosion and tuberculation are cardinal features to consider. When the emphasis is on speed and economy of installation, you'll value "Century's" lightweight, easy handling and ready adaptability.

With your post-war problems in mind, research at Keasbey & Mattison continues to seek out new ways to broaden and better the peacetime role of asbestos—and so help to build future opportunity and security for everyone.

* * *

Nature made asbestos;
Keasbey & Mattison, America's asbestos pioneer, has made it serve mankind . . . since 1873

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains

(*Continued from page 12*)

Charles E. Collins, formerly Gen. Supt., Public Utilities, Water and Sewerage, Kilgore, Tex., is now Assoc. San. Engr., at Camp Claiborne, La. He was in his Kilgore post for 10 years, and previous to that served for 10 years with the Texas Power and Light Co., Fort Worth and Waco, Tex., and for 6 years with the City of Fort Worth Water Dept. For 3 years he was Gen. Supt. of Public Utilities, Water, Light and Sewerage at Ryan, Okla.

A uniform system of identification of emergency vehicles to enable them to operate during real or practice air-raid alarms has been announced by the OCD. The primary identifying device is a white pennant to be displayed on the left front portion of the vehicle. To identify emergency motor vehicles at night a headlight mask to be used over the right headlamp has been devised. It may be made of any opaque material and is intended for use where blackout regulations permit the use of headlights. In coastal dimout areas it should be used in conjunction with dimout equipment.

Vehicles entitled to use these emergency identifications include public utility repair vehicles operating in emergency servcie.

(*Continued on page 16*)

AMERICAN WATER WORKS ASSOCIATION

Conference on War Winning Water Works Operation

Cleveland - June 15-18, 1943

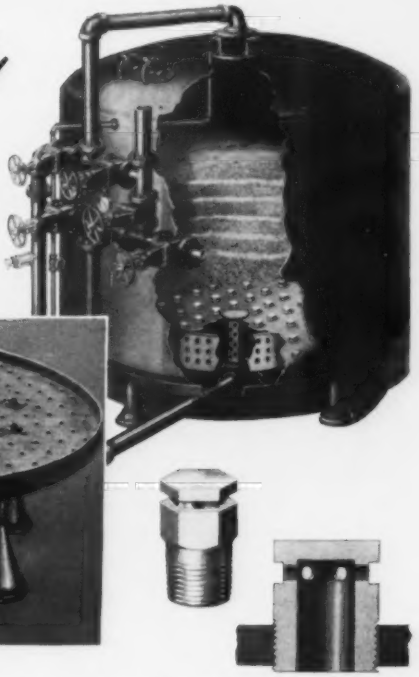
MAKE RESERVATIONS NOW BY WRITING DIRECTLY TO:

CARTER HOTEL	*or*	STATLER HOTEL
$3.00, 3.50, 4.00, 4.50	*Single Rooms*	$3.00, 3.50, 4.00, 4.50, 5.00, 6.00
$5.00, 5.50, 6.00, 6.50	*Double Rooms (for two)*	$5.00, 5.50, 6.50, 7.00, 8.00
$6.00, 7.00, 8.00	*Twin Bedrooms (for two)*	$5.00, 5.50, 6.00, 6.50, 7.00, 7.50, 8.00
From 12 to 20 available *(describe by letter)*	*Suites*	From 10 to 15 available *(describe by letter)*

FOR BEST RESERVATIONS, WRITE NOW—
REFER SPECIFICALLY AND CLEARLY TO ABOVE SCHEDULE

Another reason why

GRAVER
WATER FILTERS
insure highest filtration efficiency



Above—Strainer plate and stainless steel strainers

Right Above—Cut-away view of Graver Water Filter

Right Below—Stainless steel strainers showing recessed orifice channel

THE FILTERING CAPACITY of a water filter is based on the horizontal cross-sectional area of the filter bed. Unless the underdrain system provides for even distribution over the entire area, the water will pass through only a portion of the bed and the filtering capacity will be materially reduced.

The strainer plate type of underdrain system as provided in all Graver Water Filters assures even distribution of incoming water and backwash water throughout the entire filter bed. This system is designed so that the use of strainers set on 6″ centers distributes the water evenly. In addition, an expansion chamber below the bed assures an even amount of backwash water reaching each strainer. This permits proper backwashing and prevents clogging of the filter bed. It also acts as a collection chamber for filtered water during filtering operation.

Another important point is that all strainers used in Graver Water Filters are made of stainless steel. This type of material positively prevents closing of orifices due to corrosion. Also, the use of stainless steel strainers avoids electrolytic action between strainers and strainer plate.

The Graver type of underdrain system eliminates the need for any concrete grout or fill, therefore, no cracks—no stagnant water—no breeding places for bacteria.

Before you definitely decide on any type of equipment for filtration of water for any use, investigate the advantages offered by Graver equipment.

For further details on Graver Water Filters request Bulletin 313

WATER SOFTENERS
FILTRATION SYSTEMS
CLARIFIERS
SEWAGE EQUIPMENT
STEEL STORAGE TANKS
VAPOR CONSERVATION SYSTEMS
WELDED CONSTRUCTION
STRESS RELIEVING
X-RAYING
FABRICATED STEEL AND CORROSION-RESISTING PLATE

GRAVER

GRAVER TANK & MFG. CO., INC.
4809-45 TOD AVE.
EAST CHICAGO, IND.
CABLE ADDRESS—GRATANK
NEW YORK CATASAUQUA, PA. CHICAGO TULSA

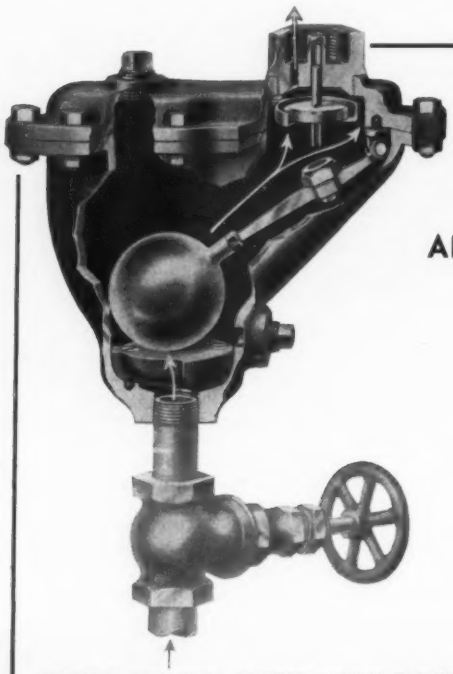
(*Continued from page 14*)

Use of the pennants and masks has been made mandatory for the 16 states and the District of Columbia in the Eastern Defense Command. OCD recommends that all states adopt its definition of emergency motor vehicles and the methods of identification prescribed. A uniform system is particularly important, OCD sets forth, in order that emergency motor vehicles may cross state lines without unnecessary interference.

Complete details of the new regulations are to be found in Operations Letter No. 111, supplement to OCD Operations Letter No. 97.

The shortage of certain kinds of copper scrap has grown so acute that only one-fifth of the nation's refining capacity for those kinds of scrap is now operating. The United States depends upon scrap as the source for approximately 40 per cent of its copper. Much of this scrap is usable by remelting and without further refining. Such items as copper wire are almost pure and can be used in place of virgin copper. The flow of this almost pure scrap, known as Number One and Number Two grades is diminishing so rapidly that the gap must be filled by other less pure grades which must be refined before they can be used.

(*Continued on page 18*)



RENSSELAER
FIG. 372
combined
AIR AND VACUUM RELIEF
and
AIR RELEASE VALVES
SIMPLE
in construction
DEPENDABLE
in operation
WRITE FOR BULLETIN Q
RENSSELAER VALVE CO., TROY, N. Y.

A NEPTUNE Fighting MACHINE
HERE is a typical machine tool working on a part for a Trident Meter. There was a time when it waited upon your orders. Now, 75% of its time is devoted to the manufacture of war materials.
57

NEPTUNE METER COMPANY • 50 West 50th Street • NEW YORK CITY

Branch Offices in CHICAGO, SAN FRANCISCO, LOS ANGELES, PORTLAND, ORE., DENVER, DALLAS, KANSAS CITY, LOUISVILLE, ATLANTA, BOSTON.

Neptune Meters, Ltd., Long Branch, Ontario, Canada.

(*Continued from page 16*)

Even greater shortages are being felt in these "less pure" grades requiring refining. These are termed "Refinery Brass" and "Copper-Bearing" Material. In appealing to industry for additional copper, brass and bronze scrap, WPB emphasizes that in December 1942 scrap refineries received only 4,800 tons of these grades—*not enough to enable them to operate at one-fifth of capacity.*

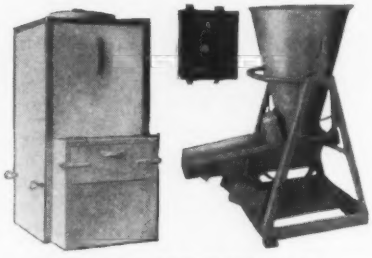
Not only are we seriously short of all grades of copper, brass and bronze scrap, but the output of mined ores cannot meet demands because of manpower shortages. As in steel, the use of scrap makes possible speedier production as well as manpower and transportation savings.

To ease the scrap shortage, the WPB Salvage Division appeals to industry to make up a forecast deficit of 625,000 tons of refinery brass and copper-bearing materials in 1943. This amounts to approximately 52,000 tons a month more than the 1,000,000 tons collected in 1942.

This, then is the goal WPB hopes will be achieved in 1943: A 62½ per cent increase in the flow of copper, brass and bronze scrap. This will result in capacity operations of the nation's copper refineries, ingot makers

(*Continued on page 20*)

SYNTRON



DRY CHEMICAL FEEDER MACHINES

Give YOU

Rheostat Control of Feed—
Vibrated Supply Hoppers—
No Moving, Wearing Parts—
Low Initial and Operating Costs

Write us about your Dry Chemical Feeding Problem

SYNTRON CO. 428 Lexington Ave. HOMER CITY, PA.

Meter Boxes
Meter Testers
Meter Yokes & Couplings

Valve Boxes
Service Boxes
Manhole Covers

Street Castings
Special Castings

H. W. CLARK COMPANY
Mattoon, Illinois, U. S. A.

They Save With

TENNESSEE CORPORATION
ferri-floc
FERRIC SULPHATE

Dalton, Georgia—Water Softening Plant

Dalton, Georgia, has a unique water treatment problem. The raw water is taken from a mountain stream which is subject to flash floods. Not only does this condition cause a rapid and wide fluctuation in turbidity, but the chemical characteristics have an equally rapid and wide variation.

This raw water problem is further complicated by the fact that the finished water produced must be uniform. This is necessary to meet the needs of the quantity laundering incidental to Dalton's textile industries. In fact, the problem of supplying a uniformly soft water to these laundries led to extensive studies and the redesigning of the plant.

Clark W. Jones, Superintendent of the Dalton Water, Light, and Sinking Fund Commission, and W. L. Avrett, Assistant Engineer of the Georgia Department of Public Health, undertook a series of laboratory studies to determine the most satisfactory and economical means of producing a uniform finished water. These tests showed that lime softening and coagulation with FERRI-FLOC during periods of low turbidity, and alum coagulation with no softening during periods of excessive turbidity, would give a fairly uniform water. Consequently, the rebuilding of the plant was based upon these findings.

When the plant was put into operation on this basis, the next step was to secure an even greater uniformity of the finished water. Plant tests were then undertaken to ascertain whether or not softening could be accomplished during these high turbidity periods.

Once more FERRI-FLOC proved the answer and is now being used at all times to produce a uniform water. Results have been excellent and economies even greater than anticipated.

The City of Dalton is indeed to be congratulated upon the quality of its water supply and its economy of production.

TENNESSEE CORPORATION

ATLANTA, GEORGIA LOCKLAND, OHIO

(*Continued from page 18*)

and foundries. The 1,625,000 tons collected will produce approximately 1,000,000 tons of copper, all of which will be used directly.

Most dramatic are those direct uses of copper in brass cartridge cases and in navigation and other precision instruments. Equally important, however, are the bronze gears and bearings so necessary to the machinery producing weapons of war. Numerous working parts of guns, tanks, ships, etc., are also made from copper-bearing bronze.

The electrical nerve-centers of ships, tanks, guns and planes depend entirely upon the conductivity of copper. In addition, not one generator or motor now in the war effort could continue to operate if it weren't for vital copper parts.

Although copper scrap is No. 1 on the list of critical material shortages, iron and steel scrap inventories are diminishing rapidly. It is hoped that the double emphasis on both copper and steel scrap will increase the flow of each.

It is hoped that the water works industry will be not the least contributor to the country's stock of raw materials.

(*Continued on page 34*)

STOP RUST

IN

STEEL TANKS

and

OTHER SUBMERGED METALS

—●—

The RUSTOP (cathodic) System instantly stops rust—thus preserving valuable equipment now in use. Installed while tanks are filled, without service interruptions.

CATHODIC PROTECTION IS APPROVED IN A.W.W.A. SPEC.

MATERIALS NOW AVAILABLE

FOR

RUSTOP
THE CATHODIC SYSTEM
OF
CORROSION PREVENTION

ELECTRO RUST-PROOFING CO.

DAYTON • OHIO

3 *Money, Time and Labor Saving Features of*

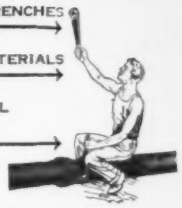
UNIVERSAL

CAST IRON PIPE

LAID WITH ONLY WRENCHES

NO CAULKING MATERIALS

NO GASKETS. NO BELL HOLES TO DIG.



For water supply, fire protection systems, sewage disposal systems, industrial, and irrigation. Flexible.

Dept. C

THE CENTRAL FOUNDRY COMPANY
386 FOURTH AVENUE, NEW YORK, N. Y.

Gentlemen: Send us information and catalog on UNIVERSAL CAST IRON PIPE.

NAME_____

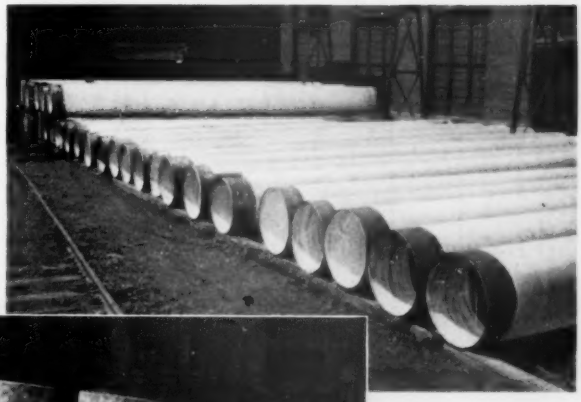
STREET_____

CITY_____

ALCO

ELECTRIC WELDED STEEL PIPE

PLAIN LENGTHS OR SPECIALS



36" O. D. Piping Ready for Loading.

Special 60" O. D. Header.

Alco Electric Welded Steel Pipe Insures Against Leakage and Breakage

AMERICAN LOCOMOTIVE COMPANY

ALCO PRODUCTS DIVISION

30 CHURCH ST., NEW YORK, N. Y. DUNKIRK, N. Y.

(*Continued from page 20*)

Answers to True-False Examination at Michigan Meeting

1—T	5—T	11—F	17—F	22—T	27—T	32—F
2—F	6—T	12—T	18—T	23—F	28—F	33—T
3—F	7—F	13—F	19—F	24—T	29—T	34—T
T	8—T	14—T	20—T	25—T	30—T	35—T
F	9—F	15—F	21—F	26—T	31—T	36—T
4—F	10—T	16—T				

Form 731
TREASURY DEPARTMENT
Internal Revenue Service
(Revised October 1941)

EXEMPTION CERTIFICATE

Tax on Transportation of Persons—Seats, Berths, or Staterooms

Place of issue of ticket ..... Date ....., 194..

Name of issuing carrier .....

Ticket Form No. ..... Ticket No. .....
(To be filled in by agent of carrier issuing ticket)

For ..... Via .....
(Transportation: seat, berth, or stateroom)

From ..... To .....

I CERTIFY that the charges for the service indicated above have been, or will be, paid for by the United States, or by a State or Territory, or Political Subdivision thereof, or the District of Columbia, as indicated below, are incurred in the performance of my official duties, and are exempt from the tax imposed under section 3469 of the Internal Revenue Code.

(Government agency or service account of which exemption is authorized) .....
(Signature)

PENALTY FOR FRAUDULENT USE $10,000 OR IMPRISONMENT, OR BOTH. .....
(Title)

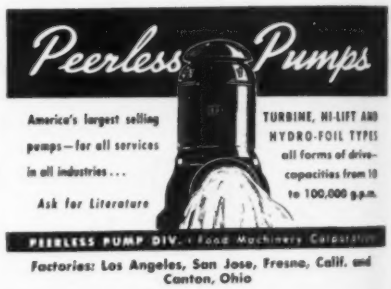
NOTE.—A separate exemption certificate will be required for each ticket furnished or fare collected.

16—39913-1

TRANSPORTATION AGENTS SHOULD NOT ACCEPT THIS CERTIFICATE UNLESS THE OFFICER OR EMPLOYEE PRESENTING IT SHOWS SATISFACTORY CREDENTIALS

Municipalities and other governmental units are exempt from payment of the federal tax on railroad and other transportation fares. To obtain this exemption, you must obtain Form 731 (sample shown herewith) from the nearest office of the Treasury Dept. Internal Revenue Service or Collector of Internal Revenue. These then have to be presented to the railroad when the tickets are obtained. City and other governmental employee's should see that these forms are obtained to expedite their employer's underwriting their expxenses to the A.W.W.A. Conference on Wartime Water Works Operation at Cleveland.

(*Continued on page 36*)


Peerless Pumps
America's largest selling pumps—for all services in all industries . . .
Ask for Literature
TURBINE, HI-LIFT AND HYDRO-FOIL TYPES all forms of drive—capacities from 10 to 100,000 g.p.m.
PEERLESS PUMP DIV. • Food Machinery Corporation
Factories: Los Angeles, San Jose, Fresno, Calif. and Canton, Ohio

PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

Trade Mark MABBS Reg. U. S. Pat. Off.

MABBS RAWHIDE PACKING

An Ideal Packing for Water Works and Sewage Pumps and Valves

MABBS HYDRAULIC PACKING COMPANY, *Inc. 1892*

431 S. Dearborn St., Chicago, Ill.

V FOR VISION, TOO

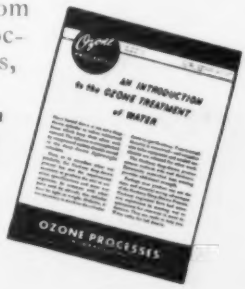
• • • ▬ vision through laboratory research to see where improvement is needed and to find a better way to do it.

This is the present purpose of our laboratory • • • ▬ equipped solely for ozone research • • • ▬ to develop a better way to make drinking water both potable and palatable.

Our staff of chemists, physicists, and bacteriologists, exploring scientifically every practical use for ozone in water treatment, is completing a process for post-war application which will merit the serious consideration of every progressive water works man.

In the meantime, we invite correspondence from all interested in a better American-designed process for the satisfactory removal of odor, tastes, and color.

Write for our new booklet "An Introduction to the Ozone Treatment of Water."



OZONE PROCESSES INCORPORATED
1500 WALNUT STREET, PHILADELPHIA, PA.
A wholly owned subsidiary of Welsbach Engineering and Management Corp.

(*Continued from page 34*)

Idle electric motors and generators are being energetically sought out by the WPB which, through John Gammell, Chief of the WPB Electrical Equipment Branch, recently issued an appeal to all industry to list with it all idle motors and also to call upon it for second hand equipment, the use of which may obviate the making of a new motor. All information and inquiries should go to the Used Motor Unit, Electrical Equipment Branch, General Industrial Equipment Division of the WPB.

Restrictions on purchase orders for new motors and generators imposed by General Conservation Order L–221 as amended January 15, make an AA–5 or higher preference rating necessary and the purchaser must certify that he has made every reasonable effort to: (1) adapt idle motors or generators in his possession to the purpose for which new ones are sought; (2) obtain used equipment from other sources; and (3) repair or recondition his existing equipment.

Oaklandon Reservoir, supplying the city of Indianapolis, filled on March 17 as the result of an inch-and-a-half rainfall the day before. Another downpour of almost an inch on March 19 sent a maximum discharge of 1,060 mgd. through the spillway on March 20. A complete report on

(*Continued on page 38*)

WATER REFINING
EQUIPMENT HEADQUARTERS
INDUSTRIAL—PROCESS
RAILROAD—MUNICIPAL—HOUSEHOLD

FILTERS Of All Types *and* Capacities . . . Gravity . . . Pressure

SOFTENING SYSTEMS
All Types *and* Capacities—Zeolites (*synthetic and natural*) and Lime and Soda

CHEMICAL FEEDERS (wet or dry)
Acids . . . Hypochlorites . . . Alkalies

EQUIPMENT FOR REMOVAL
Of Iron . . . Taste . . . Odors . . . Colors . . . Suspended Matter

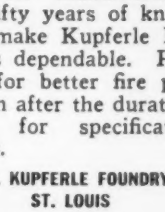
SWIMMING POOL EQUIPMENT
AERATORS · DE-GASIFIERS
WATER TEST SETS
RE-CARBONATORS

The AMERICAN WATER SOFTENER COMPANY
WATER REFINING EQUIPMENT HEADQUARTERS
INDUSTRIAL · PROCESS · RAILROAD · MUNICIPAL
HOUSEHOLD, ETC.
322 LEHIGH AVE., PHILA., PA.

When The Sirens
SHRIEK

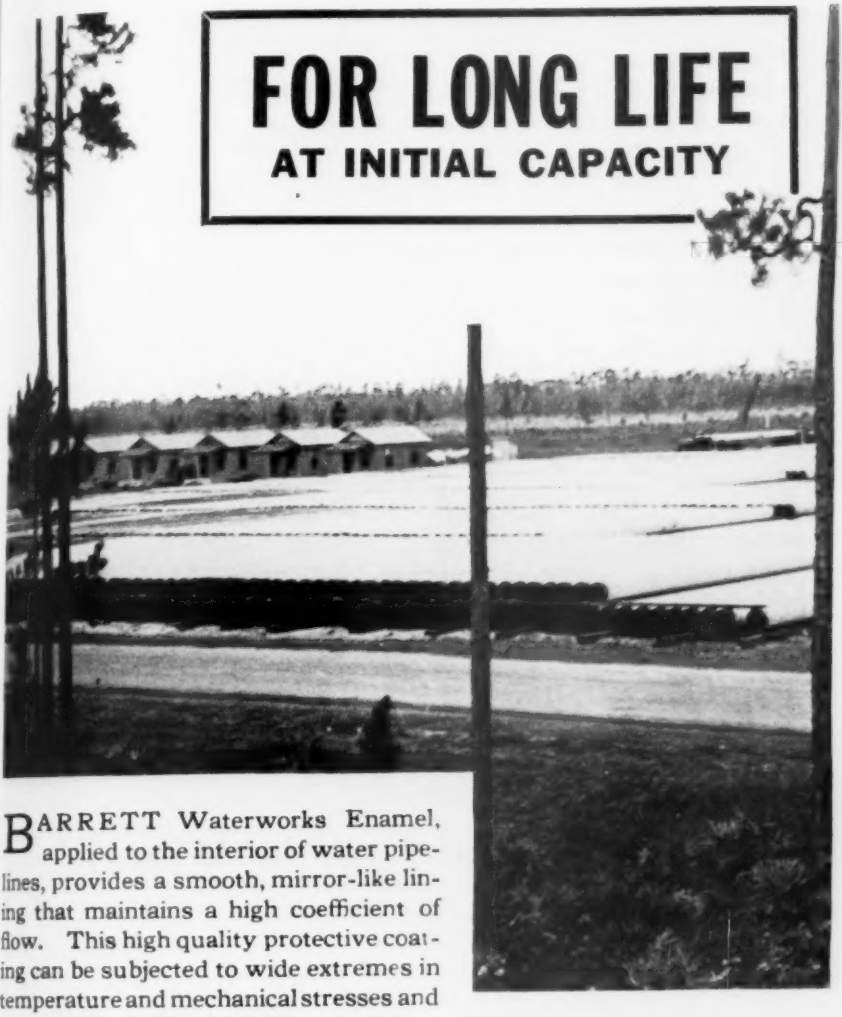
If Kupferle Fire Hydrants are on the job, all is well. Under any weather conditions, the precision manufacturing and fifty years of know-how make Kupferle Hydrants dependable. Plan now for better fire protection after the duration. Send for specification sheets.

JOHN C. KUPFERLE FOUNDRY CO.
ST. LOUIS



KUPFERLE
FIRE HYDRANTS

FOR LONG LIFE
AT INITIAL CAPACITY



BARRETT Waterworks Enamel, applied to the interior of water pipelines, provides a smooth, mirror-like lining that maintains a high coefficient of flow. This high quality protective coating can be subjected to wide extremes in temperature and mechanical stresses and yet give years of trouble-free service.

Barrett Enamel meets the specifications of the American Waterworks Association. It is completely non-conducting and highly resists corrosion, electrolysis, water absorption and mechanical distortion. It adds many years to the useful life of the pipe, and keeps repair and upkeep costs at a minimum.

FIELD SERVICE: The Barrett Waterworks Service Department and staff of Field Service men stand ready to provide a broad measure of cooperation. These services include consultation on technical details, training of crew, and job inspection.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK

Barrett
WATERWORKS
ENAMEL

(*Continued from page 36*)

this construction, which was 15 years in the actual planning and almost two in the making, and which created the third-largest body of water in Indiana (1800 acres), will be carried by the JOURNAL at an early date.

The first step in a utility rate reduction based upon the President's Executive Order of April 8, 1943, was taken in behalf of Price Administrator Prentiss M. Brown and Director of Economic Stabilization James F. Byrnes, when a brief was submitted to the Michigan Public Service Commission, seeking rate reductions by the Detroit Edison Co., reported to total six or more millions a year. The City of Detroit has previously proposed that the Detroit Edison Co. make a rebate to its consumers.

The pertinent paragraph of the Executive Order reads as follows: "The attention of all agencies of the Federal Government, and of all State and municipal authorities, concerned with the rates of common carriers or other public utilities, is directed to the stabilization program, of which this order is a part, so that rate increases will be disapproved and rate reductions effected, consistently with the Act of October 2, 1942, and other applicable Federal, State or municipal law, in order to keep down the cost of living and effectuate the purpose of the stabilization program."

(*Continued on page 40*)

DIFCO

Detection of Coli in Water

This group of Difco Dehydrated Culture Media is recommended for the detection and confirmation of the presence of coliform bacteria in water. Each medium is prepared to conform to all requirements of "Standard Methods of Water Analysis" of the A. P. H. A. and A. W. W. A.

Bacto-Lactose Broth
Bacto-Endo Agar
Levine's Eosin Methylene Blue Agar, Difco
Bacto-Brilliant Green Bile 2%
Bacto-Crystal Violet Lactose Broth
Bacto-Formate Ricinoleate Broth
Bacto-Fuchsin Lactose Broth

Specify "DIFCO"

DIFCO LABORATORIES
INCORPORATED
DETROIT, MICHIGAN, U. S. A.

STEEL PIPE...WEAPON OF WAR

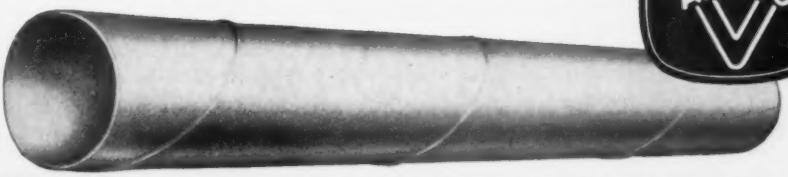
Production generals find ARMCO Spiral Welded Pipe an effective weapon against waste and inefficiency on vital war projects. The same steel pipe that served so ably in peacetime water supply and force mains now conserves time, labor and metal for the war effort.

ARMCO Pipe is easy to install without the use of skilled labor. Fifty-foot lengths mean fewer joints, less assembly work. A spun-enamel lining assures high flow capacity, prevents tuberculation and recurrent cleaning troubles. Shattering or sudden breaks are no worry, because "Spiral Welded" has an ultimate strength of 50,000 to 60,000 pounds per square inch. Sizes range from 6 to 36 inches, with wall thicknesses in any diameter to meet the needs of specific jobs.

Even though you cannot get ARMCO Spiral Welded Pipe for other than the most important war projects, be sure to include it in your plans for the future. When Victory comes it will again be ready to help solve your most troublesome water supply problems. The American Rolling Mill Co., Pipe Sales Div., 1021 Curtis St., Middletown, Ohio.

ARMCO STEEL PIPE

ARMCO



MEETS A. W. W. A. STANDARD SPECIFICATIONS

(*Continued from page 38*)

CANADIAN SECTION MEETING

The attendance at the Twenty-Third Annual Convention of the Canadian Section, held at Hamilton, Ontario, April 7–9, reached an all time high registration of 447. The membership of the section had likewise increased to the top figure of 290 at the close of the meeting. There was keen following of the papers and guided discussions.

The election of officers resulted in the following new office holders: Chairman, T. M. S. Kingston, City Engr. and Water Works Supt., Chatham, Ont.; Trustees, R. Harrison, Mgr., Public Utilities Com., Scarborough, Ont.; and H. S. Nicklin, City Engr., Guelph, Ont.; A.W.W.A. Director, W. L. McFaul, City Engr. and Mgr. of Water Works, Hamilton, Ont.

Other members of the executive for the year include: Past Chairman O. H. Scott, Belleville; Trustees, A. L. McPhail, St. Catharines; J. W. Peart, St. Thomas; G. H. Ferguson, Ottawa; and W. H. Waddell, Owen Sound; Representative of Canadian Water Works Equipment Assn., W. T. Randall, Toronto; and Secretary-Treasurer, A. E. Berry, Toronto.

The papers and discussions at the convention were closely related to wartime problems. As has been the practice for some years, part of the program consisted of written papers, and part of "guided discussions." The latter feature has proven popular as a means of stimulating discussion on current topics.

The written papers presented included the following:

"Postwar Reconstruction in Water Works" by W. C. Miller, City Engr., St. Thomas, Ont. [This paper is published in the text of this JOURNAL.]

"Problems in Water Works Distribution Systems Under War Conditions" by F. J. Veale, Supt. of Water Works, Hamilton, Ont.

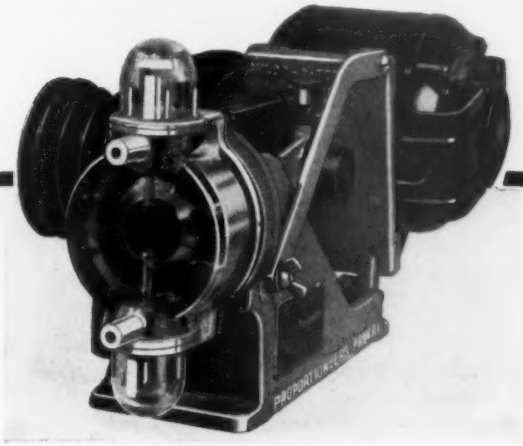
"Water Works Accounting Practice for Canadian Municipalities" by C. W. Eastwood, Office Mgr., Public Utilities Com., London, Ont. [This paper is published in the text of this JOURNAL.]

"Surplus Water Works Funds" by W. R. Strike, Chairman, Public Utilities Com., Bowmanville, Ont.

"Operating Experiences in Canadian Water Purification Plants"—a symposium on six plants, given by N. J. Howard, Toronto; O. H. Scott, Belleville; A. J. Deslauiers, Lachine, P. Q.; D. H. Matheson, Hamilton; G. H. Strickland, Windsor; and W. E. Robinson of Calgary, Alta.

These papers covered extensive fields, with emphasis placed on war and postwar problems. Interest was aroused in the improvements and extensions which might be allocated to water works systems for the postwar period. The necessity for advance planning was pointed out in order to be able to take advantage of funds or other assistance when and if such become available.

(*Continued on page 42*)



"THE LITTLE RED PUMP"

For Water and Sewage Treatment

DESCRIPTION: Heavy Duty Midget Chlor-O-Feeders are sterilizing thousands of pumped water supplies. This truly HEAVY DUTY Midget % Proportioneers %, known to many as "The Little Red Pump," is a constant rate, manually adjustable Diaphragm Type pump. Standard model, with step cone pulleys and stroke length adjustment cam, has capacity variable from nearly 0 up to 6.5 gallons per hour. Feeding 1% Calcium or Sodium Hypochlorite Solution, this represents more than 10 lbs. of chlorine per 24 hours. With "See-Thru" plastic reagent end, diaphragm and check valve action are visible to the operator as is the hypochlorite or other chemical solution which squirts against the sides of the built-in sight feeder dome on each discharge stroke of the % Proportioneer %. Injections can be made directly into main pressures up to 85 lbs. per square inch, or into low or negative pressure zones, such as water pump suction.

Long diaphragm life is insured by patented fabric reinforced annular bead construction.

USES: In addition to hypochlorite feeding for water and sewage treatment, the Heavy Duty Midget % Proportioneers % is used to feed

Alum	Calgon	Ferric Chloride
Soda Ash	Lime Slurry	Sulphuric Acid
Ferrous Sulphate	Sodium Aluminate	Aqua Ammonia
Ferric Sulphate	Caustic	Ammonium Sulphate, etc.

Write for Descriptive Bulletin

Booth #63, AWWA Conference
Cleveland, Ohio, June 15–18, 1943

% PROPORTIONEERS, INC. %

61 CODDING STREET PROVIDENCE, R. I.

(*Continued from page 40*)

Mr. Veale's paper was devoted to the maintenance of distribution systems at the maximum efficiency to meet increased war demands. Cleaning of water mains was advocated as one aid in this problem.

The paper on accounting contained many useful suggestions relative to the part this should play in administration of water works.

Mr. Strike's talk on the problem of surplus water works funds opened up a discussion which has been brewing for some years. It has become intensified recently because of increasing surpluses. This situation is applicable to the Province of Ontario only, where so many water works systems are operated by commissions. The legislation requires that all surplus funds must be turned over to the municipal treasurer. Differences have arisen in respect to the authority of commissions and to what constitutes a surplus. The debate on this concluded with the adoption of a resolution asking the executives to take action to clarify this situation.

Four guided discussions were held, as follows:

"Maintenance of Deep Well Water Systems"—Chairman, E. V. Buchanan, London

"Sterilization of Water Works Distribution Systems"—Chairman, J. C. Keith, Windsor

"Water Works Administration Under Wartime Conditions"—Chairman, William Storrie, Toronto

"Control of Excessive Water Consumption in Wartime"—Chairman, R. L. Dobbin, Peterborough.

These discussions offered an opportunity for the delegates to exchange opinions on problems of every day concern. It served as a clearing house for many matters with which the operator and administrator are faced.

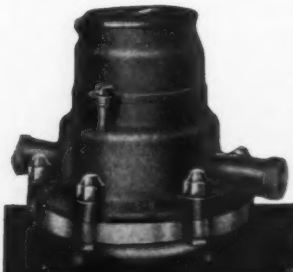
The presentation of awards and certificates took place at the annual banquet. The section offers a number of these each year. The following were presented:

To receive the Fuller Memorial Award, Norman J. Howard, Toronto. It will be presented at the A.W.W.A. Conference at Cleveland in June.

The Past Chairman's Certificate to William Storrie, Toronto, Chairman 1941–1942.

(*Continued on page 44*)

NIAGARA IRON CASE WATER METERS



provide wartime copper conservation plus the time-proved Niagara design. They comply with victory-meter limitations. Works are interchangeable with American Bronze Case Meters.

WRITE FOR CATALOG.

BUFFALO METER COMPANY

Established 1892 2914 Main St., Buffalo, N.Y.

FOR OVER 50 YEARS

Sincerely yours *

HAS BEEN PROUDLY INSCRIBED—IN EFFECT IF NOT IN FACT—
ON THOUSANDS OF BUILDERS FLOW METERS AND CONTROLLERS

FIFTY YEARS' EXPERIENCE
In the Design and Manufacture of

BUILDERS
WATER AND SEWAGE WORKS
Equipment

AT YOUR SERVICE
For
Post-War Planning

A.W.W.A. CONVENTION
Cleveland, June 15 - 18

Correspondence
Invited

* Back in the old days, second-rate Roman sculptors who made unsightly nicks in the marble would secretly patch up the flaws with a mixture of wax and marble dust. These patches would drop out later on and honest artists suffered so much that they began labelling their handiwork "Sine Cera" (i.e. "Without Wax"); from this we derive our word "sincere" meaning honest, genuine, real.

ARMY E NAVY
AWARDED
AUG. 1 st 1942

BUILDERS-PROVIDENCE, INC.
Est. 1820 • DIVISION OF BUILDERS IRON FOUNDRY • Inc. 1852
9 CODDING STREET • PROVIDENCE, R. I.

BUILDERS
RECORDING-INDICATING-CONTROLLING
Instruments

(*Continued from page 42*)

To the retiring Chairman, O. H. Scott, a memento in the form of a silver mounted and engraved ebony cane.

Hunt Memorial Award to Thomas Hodkinson of London.

Membership Service Awards are offered to those members who have continuous memberships of 15, 20, 25 or 30 years. While there were no candidates this year for the 25 and 30 year certificates, the following members were given 20 year awards:

Hugh Kellner, Windsor; W. C. Miller, St. Thomas; A. G. Peirson, Weston; A. H. R. Thomas, New Toronto; H. G. Hall, Ingersoll; J. C. Keith, Windsor; C. Brakenridge, Winnipeg; and the Windsor Utilities Commission.

A 15-year certificate went to F. M. Brickenden of Winnipeg.

These membership awards were presented by H. G. Hunter of Montreal, who was first secretary of the section, 23 years ago.

The manufacturers, through the Canadian Water Works Equipment Assn., assisted materially in the convention. Exhibits have been omitted for the war, but the Equipment Assn. sponsored a splendid floor show, and the "Water Works Club." The latter became the social center and meeting

(*Continued on page 46*)

The Dry Chemical Feeder That's *BUILT TO LAST*

INFILCO Type D Dry Chemical Feeders are built to perform with their original accuracy and dependability year after year. Two have been in continuous service at Louisville, Ky., for 15 years — And more trouble-free years are ahead, too, for Infilco Feeders are *built* for long life.

Their exclusive principle of operation permits simplicity in design and durability in construction, contributing to long, dependable service.

ECONOMICAL—Long life, without costly repairs and replacements, means *economical* operation. It pays to buy Infilco Type D Feeders for long-time economy. Write for Bulletin 205-A.

INFILCO INCORPORATED

FORMERLY
INTERNATIONAL FILTER CO.
325 W. 25TH PLACE, CHICAGO, ILL.

"*Plangineering*"—Something to *DO NOW* to Avoid Slack at War's End

"PLANGINEERING" is not just *talking* about post-war projects. It is doing something about them NOW!

Now? With the manpower shortage and with *permanent* high-grade materials and equipment so hard to get even on priority?

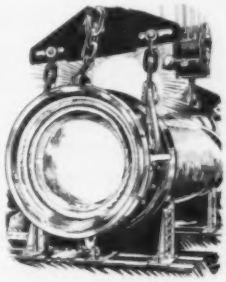
Yes, NOW! Many a water works, sewerage, gas and pipeline system will need revamping after the war. Why waste valuable months when with "plangineering" you can be ready to start necessary work almost immediately at war's end?

How? *Plangineer*—write down a list of the things you would do on your system within the next year if the war ended this month. Turn it over to one of your remaining technical men or a consulting engineer and instruct him:

(1) To work up a skeleton set of plans and specifications.

(2) To prepare a bill of materials, paying particular attention to the elimination of wartime "makeshifts," and their replacement with materials of time-tested permanency—corrosion resisting cast iron pipe, for instance, now made in accordance with the recently adopted A.S.A. LAW OF DESIGN.*

(3) To estimate the cost, based on the 1940 level (or some other year). This will give a *base* estimate readily adjusted up or down percentagewise with sufficient accuracy to approximate material and labor costs current after the war. This will give a base for promptly discussing and arranging financing if necessary.



(4) Review the list at six-month intervals, and revise plans, specifications and estimate accordingly.

PLANGINEER NOW to insure a quick start on needed improvements and conversions immediately the war ends. Our soldiers need not be out of jobs when they return home if enough of us do "plangineering."

*We will gladly send you a copy of the American Standards Association LAW OF DESIGN FOR CAST IRON PIPE. By following the A.S.A. LAW OF DESIGN, weights and thicknesses of cast iron pipe can be scientifically designed for specific laying conditions. No more guessing when writing specifications. You get the *exact* pipe your conditions call for. Economy with safety is the result. Long life with low maintenance, too.

AMERICAN CAST IRON PIPE COMPANY

Birmingham, Alabama

Sales Offices in

Chicago, Cleveland, Dallas, Houston, Kansas City, Los Angeles, Minneapolis, New York, San Francisco

(*Continued from page 44*)

place for all. It replaced entertainment in private rooms, and with successful results.

Participation in this annual meeting by the water works men of Canada showed clearly the attitude towards gatherings and discussions of this nature during the war. The large registration, combined with the enthusiastic discussions, indicated again that adversity draws people together, and that there is a genuine need to have these problems threshed out together.

A. E. BERRY
Secretary-Treasurer

The chemical products reclamation program has been extended by the WPB's Salvage Division to make sure that no valuable chemical resources, such as solvents and cleaners, cutting and lubricating oils, paints and chemical by-products, go down the sewer. After a review of reports of reclamation now being obtained from a thousand large plants, the WPB Chemical Resources Section will go on to study possible adaptations and extensions of the reclamation methods, giving technical advice for increasing reclamation without the use of critical materials.

(*Continued on page 48*)

McWane Pipe HELPS the
MAN POWER PROBLEM

With its modern, factory-made joints—Precalked or Threaded—no skilled labor is needed to lay McWane 2" cast iron pipe. There is no manpower problem. Any man can make these joints.

IMMEDIATE SHIPMENT

McWANE CAST IRON PIPE CO.
BIRMINGHAM, ALA.

McWANE 2" CAST IRON PIPE

Vogt Fire Hydrants

Standard—
"Traffic Model"—
Flush Type—
Water Crane—
Type

Vogt Gate Valves

Non-Rising Stem—Outside Screw and Yoke—Hub End—Flanged End—Ends to Fit any Type Pipe.

Also—Floor Stands, Shear Gates—Tapping Sleeves and Valves, Flap Valves and Mud Valves.

Vogt Brothers Mfg. Co.
INCORPORATED
MAIN AT 14th ST.
LOUISVILLE KENTUCKY

CLOUDS OF BACTERIA-LADEN DUST ENDANGERED THE WATER SUPPLY!

On a rush job enlarging a state airport, tractors, trucks, shovels and graders were working 16 hours a day—during the worst drought in the history of the community. As a consequence, thick clouds of bacteria-laden dust drifted almost constantly over two nearby reservoirs, increasing the bacteria count.

The water works engineer proved equal to the situation. He began at once devising means of getting Per*chloro*n into action. Per*chloro*n is a super-test calcium hypochlorite that provides an excellent stand-by source of chlorine. It dissolves readily, is unusually stable and has more than 70% available chlorine. Per*chloro*n has performed vital service in many water supply emergencies.

In the case in question, here is how Per*chloro*n was used. A 1½-ton truck, carrying an air compressor, pump, wooden barrel and high pressure hose, was put into service. A mixture of one can of Per*chloro*n to a barrel of water was sprayed on the surface from the moving truck, or by a man walking along the embankment.

Per*chloro*n at the rate of two or three parts per million was sprayed on the reservoirs twice a week.

RESULT: Low bacteria count—and only three hours time consumed per application.

Per*chloro*n will serve *you* just as dependably in any situation demanding emergency sanitation. During these times much of the Per*chloro*n manufactured is, of course, going into essential wartime needs. That leaves less for our customers and you can help this situation by: *Ordering only for regular current needs—well in advance.*

Penn Salt representatives are experienced in many of the unusual problems that face water works engineers today. Call on them, without obligation, for advice and cooperation. And if you do not have your *free* copy of the valuable booklet on Per*chloro*n, write today to Dept. JAW.

Perchloron
REG. U.S. PAT. OFF.

PENNSYLVANIA SALT MANUFACTURING COMPANY
Chemicals
1000 WIDENER BUILDING, PHILADELPHIA, PA.
NEW YORK • CHICAGO • ST. LOUIS • PITTSBURGH • WYANDOTTE • TACOMA

(*Continued from page 46*)

REPORT OF THE ILLINOIS SECTION MEETING

Ground-water conservation was the highlight of the Illinois Section meeting held April 8 and 9 at the Hotel Abraham Lincoln, Springfield, Ill. The Section changed from a three-day to a two-day meeting and this, combined with manpower shortages and gasoline rationing, led to a registration smaller than previous years. Some rather interesting effects of the war on attendance are shown in the accompanying table, summarizing registrations in recent years.

Summary of Registrations—Illinois Section

	1938 Spring-field	*1939* Ur-bana	*1940* Chi-cago	*1941* Quincy	*1942* Chi-cago	*1943* Spring-field
Managers & Superintendents	36	34	50	41	52	36
Ass't. Mgrs. & Sup'ts.	6	12	15	3	12	5
Chemists & Operators	11	10	18	10	12	9
Other Water Works Employees	13	10	22	6	41	5
Consulting Engineers	12	7	13	4	15	10
State & Federal	16	21	11	12	19	18
University	5	5	4	2	4	1
Students	1	2	8	—	3	—
Sales & Associates	66	67	70	60	118	52
Trade Assoc., Publications, etc.	3	3	6	3	3	1
Ladies	15	6	9	11	63	5
Total	184	177	226	152	342	142
Per Cent Men Water Works Employees	39.1	38.6	47.4	42.6	41.9	38.5
Henshaw Cup Rating	54.1	65.7	75.3	50.3	87.5	42.2
Registrations, 1st day	177	136	125	101	244	137
" 2nd "	7	41	82	41	109	5
" 3rd "	—	—	19	10	29	—

Dr. Carl A. Bays, of the Illinois State Geological Survey, was "lead-off" man, with a paper titled "New Developments in Ground-water Exploration." Dr. Bays described some new electrical and mechanical methods for underground exploration, whereby such things as well casing, character of strata, velocities, and other factors vital to knowledge of ground-water sources can be determined. Some of the methods he described have been used extensively in oil field work, and they promise to be great help to the water supply field.

Dr. Max Suter read a paper on "The Need of Conservation of Our Ground-Water Resources." This remarkable paper summarized the fruits of two years of special investigation by the Illinois State Water Survey, directed by Dr. A. M. Buswell. Dr. Suter pointed out that ground water may come either from drift wells or rock wells, and may be either fresh (perhaps 10 years old) or connate (thousands of years old). Recent

(*Continued on page 50*)

HOMES WITHOUT WATER?

WATER often travels many, many miles before it passes through the large water mains buried in the street outside the home. From that point, it must be transported through water service pipe into the plumbing system inside the house. This water service pipe, which runs from the main to the meter, is probably the most important pipe in the construction of any dwelling. Important because, first, it delivers a vital commodity to those who will occupy the premises, and important because, second, it is buried underground where it must combat much more severe conditions than pipe which is installed in the interior of the home above the surface.

For these reasons, the pipe selected for the final transport of water has always been carefully scrutinized before use. It is very costly to repair bursts in buried pipe, or to replace a service that has failed to withstand the corrosive conditions which such installations encounter. Most metals today, in this war emergency, are scarce, and but for the prompt availability of Type K Tube-Loy, it might be necessary to resort to water service installations which, at best, would be temporary and costly of replacement.

There is an adequate supply of lead, the principal component of Type K Tube-Loy, and ASARCO has expanded its extrusion facilities to meet the nation-wide demand for this tubing.

Engineers, contractors, water works officials, and plumbers have always insisted on the installation of water service pipe which will insure a reliable, adequate delivery of water for home consumption. The availability of *Asarco* Type K Tube-Loy has rendered any deviation from that procedure unnecessary.

AMERICAN SMELTING and REFINING COMPANY

LEAD PRODUCTS DIVISION — **120 BROADWAY, NEW YORK**

You are cordially invited to
attend the Tube-Loy Exhibit
A. W. W. A. CONVENTION
CLEVELAND · JUNE 15TH TO 18TH
SPACE NO. 22 · STATLER HOTEL

(*Continued from page 48*)

studies indicate that most of the ground water pumped is irreplaceable connate water.

In Illinois, 37 per cent of the municipal pumpage (excluding Chicago) is from ground water. Industrial pumpage exceeds municipal pumpage from two- to five-fold in some regions. Probably 75 per cent of the Illinois water supply (excluding Chicago) comes from wells.

The Illinois studies have included an inventory of all wells, well inspections, chemical analyses, geologic studies, hydraulic studies, and integrated analysis of the data gathered. In addition, certain special regional studies have been made. It is clearly established that ground water is receding steadily, and it is concluded that legal regulatory measures must be developed for the conservation of ground-water sources.

H. L. White, San. Engr., of the Univ. of Illinois, presented the report of the Committee on Control of Water Well Drilling. This committee has been working for three years on the preparation of proposals for legislative enactment to provide ground-water control. A draft of a possible Act was outlined, which would establish a Board of Ground-Water Control. The Section voted the continuance of the committee and empowered it to move toward the introduction of such legislation to the Legislature.

New officers of the Illinois Section are: Chairman, Clifford Fore, Chemist & Ch. Operator, Carbondale; Vice-Chairman, Herbert L. White, San. Engr., Univ. of Illinois, Urbana; Trustee, John P. Harris, Ind. Chemical Sales Div., Chicago.

W. W. Deberard, City Engineer, Chicago, continues as Section Director; Maj. F. W. Hartman, U. S. Corps of Engrs., Chicago, becomes Past-Chairman; Capt. C. W. Klassen continues as Trustee; and H. E. Hudson Jr., Champaign, is Secretary-Treasurer. The Geo. W. Fuller Award was presented to Louis R. Howson in recognition of his constant efforts in behalf of the Section, and his inspiring leadership as National President during the year 1941–42.

All those registered were the guests of the Water Works Manufacturers at a cocktail party preceding the banquet on April 8. The Manu-

(*Continued on page 52*)

ZECO GREENSAND ZEOLITE

Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

ZEOLITE CHEMICAL CO.
90 WEST STREET **NEW YORK, N. Y.**

The Flags are going up all over America!

In this fateful hour, 130,000,000 Americans have pledged that we *shall not* fail. That is why every Army-Navy "E" that rises over the war plants of the nation causes American hearts to beat stronger with hope, with courage—and with renewed determination to fulfill their sacred pledge. For these flags are both a symbol of our strength . . . and a warning to our enemies that the day of their final destruction is drawing closer.

Today, the Army-Navy "E" flies over the Niagara Falls plant of the Mathieson Alkali Works. From this plant a continuous stream of chemicals flows into the nation's war industries...chlorine, caustic soda, ammonia, sodium methylate, sodium chlorite and high test calcium hypochlorite.

To the friends and industries who look to Mathieson for many of their essential chemical requirements, we express our appreciation for their cooperation and forbearance which has helped us maintain a record production of war materials. Teamwork like this will help raise other "E" flags over America's war plants—and will help keep them flying at full mast until victory is ours.

Mathieson **CHEMICALS**

The MATHIESON ALKALI WORKS (Inc.)
60 East 42nd Street, New York, N. Y.

LIQUID CHLORINE . . . SODA ASH . . . CAUSTIC SODA . . . BICARBONATE OF SODA . . . BLEACHING POWDER . . . HTH PRODUCTS . . . AMMONIA, ANHYDROUS and AQUA . . . FUSED ALKALI PRODUCTS . . . SYNTHETIC SALT CAKE . . . DRY ICE . . . CARBONIC GAS . . . SODIUM CHLORITE PRODUCTS

(*Continued from page 50*)

facturers representatives also furnished the entertainment following the banquet—a floor show. W. W. Brush, A.W.W.A. Treasurer, spoke briefly on recent A.W.W.A. activities. Maj. F. W. Hartman, who served as toastmaster, introduced the Section officers and distinguished guests.

Carl Duy, Engr. of Water Works, Aurora, told of the work he had been directing in the modernization of the Aurora Water Works. Two years ago, unaccounted-for water was 48 per cent of the total pumped. This has been reduced to 40 per cent by more accurate main line metering, metering of free water, and retirement of antique meters. Studies of distribution system leakage promise further great reduction.

The 2,250 ft. deep Aurora wells haveg been reconditioned; bridges removed, and caving sections lined, in all a $7,500 expenditure which brought a $3,000 annual saving. The distribution system has been mapped, buildings redecorated, and equipment inventoried. Conferences were held with the State Health Dept. and the Fire Underwriters. Accounts receivable have been reduced 55 per cent.

L. R. Howson opened the Superintendents Round Table Session with his paper on "Effect of Wartime on Water Supply, Operation and Design." He stressed the increased difficulties and responsibilities facing water works men during the war: the need to conserve, yet be able to meet increasing demands. (*See* the text of this JOURNAL for a complete presentation of this paper.)

J. C. Moomau's paper on the work done on buildings and grounds at Sterling, Ill., was unique in that no mention was made of priorities or shortages. He took over a somewhat rundown plant, and polished it up with ingenious use of non-critical materials, until the local citizenry began to stop and eye the plant with a "may-we-come-in" look. The day when the "Visitors Welcome" sign may be hung out again is anticipated eagerly.

S. T. Anderson, of Springfield, explained how his community manages its "distribution" work. Considerable enthusiastic questioning was evoked about materials for routine work and new construction.

C. M. Roos, E. St. Louis, felt that wartime "mechanical and electrical" work needs could well be summarized under six headings: (1) inspect regularly—practice preventive medicine; (2) do more maintainance work; (3) use junk; (4) conserve fuel and energy; (5) lubricate adequately; and (6) keep the house clean. By obeying these maxims a maximum contribution to the war effort can be made.

H. L. Dahm, Pres., G. S. Robins & Co., St. Louis, Mo., presented a thorough and interest-holding paper on "Wartime Chemical Supply Problems." His paper was filled with precise and up-to-the-minute information on supplies of all the major water treatment chemicals and with notes on the factors that are causing shortages or delays.

The April 9 sessions was opened by a paper presented by L. P. Lessard, Johns-Manville, Chicago, on "War Damage Repairs." This paper

(*Continued on page 54*)

For more than half a century Hersey Water Meters have consistently and accurately carried on for water works officials, measuring a large part of the metered service of the nation. The Hersey Iron Case Meter with Magni-Vision All Glass Bonnet* is just another forward step in Hersey Water Meter service.
A special circular on this improvement yours upon request.
HERSEY MANUFACTURING CO.
SOUTH BOSTON, MASS.
BRANCH OFFICES: NEW YORK — PORTLAND, ORE. PHILADELPHIA — ATLANTA — DALLAS — CHICAGO SAN FRANCISCO — LOS ANGELES
*Patented by a Hersey engineer June 4, 1907

(*Continued from page 52*)

opened with a series of excellent photographic illustrations of actual bomb damage in England, and then continued to show the ways available for making emergency distribution system repairs.

Paul Hansen, Chicago Cons. Engr., and Consultant to the War Manpower Commission, gave the first of three "off-the-record" talks on government and water works. Under the title, "The Manpower Situation in the Water Works Field," he described the federal organization for dealing with sanitary engineers procurement and assignment, gave estimates of the needs of the army and other agencies for specialized sanitation personnel, and outlined some of the yardsticks and policies involved. In discussion, Capt. C. W. Klassen, who is administering the program, added some detail as to needs of the armed forces for men, and defined more specifically the basis on which procurement and assignment are proceeding. These presentations brought out a great deal of questioning from the audience, most of which served to emphasize that the federal government has adopted a rigorous and well-informed policy for drafting personnel for wartime sanitation.

H. Lloyd Nelson, of the War Production Board, Washington, gave the final "not-for-publication" talk. He outlined the present organization for allocation of materials to water works, and the procedures that are to be used in securing materials. He dealt at some length on some of the inequities of the present regulations, and on the prospects of changes in the regulations. Much of his time was used in answering concrete questions from the floor.

All in all, the 35th Annual Meeting was characterized by the timeliness of the papers, the rapid-fire way in which the meeting proceeded, and by the interest displayed by the members, as evidenced by large attendance at the sessions.

H. E. HUDSON
Secretary-Treasurer

"War Emergency Radio Service Fact Sheet" is a brief OCD publication available from the Editorial Section, OCD, Washington, D.C. It describes the advantages and applications of walkie-talkies in municipal civilian defense and very highly recommends the institution of such a program in all OCD defense council groups. Complete information is available from the above address.

(*Continued on page 56*)

COOK Well Strainers

A reciprocal relation, the life and functioning of the one depending much on the other.

A. D. COOK, INC.

Lawrenceburg - Indiana

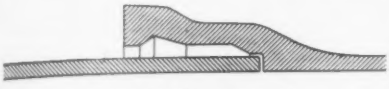
COOK Deep-Well Turbine Pumps

Clow-National

CAST IRON PIPE AND FITTINGS

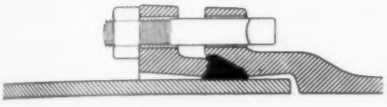
CAN BE FURNISHED TO MEET THE REQUIREMENTS OF ALL EXISTING SPECIFICATIONS

SUPER-deLAVAUD CENTRIFUGALLY CAST



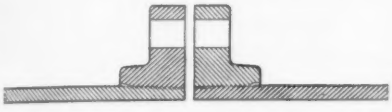
Standard Water Bell

The standard water bell is the most common type of cast iron pipe joint—popularly known as the "bell and spigot" joint. Available in sizes 3 to 24 inches inclusive, in 12 and 18-foot lengths, and for working pressures up to 250 pounds.



"C-N" Mechanical Joint

A time-saving, easily installed mechanical joint cast iron pipe now used extensively. Made in all sizes from 3 inches through 24 inches, in 18-foot lengths, and for pressures up to 250 pounds.



Flanged Joint

Cast iron flanged pipe is widely used for exposed pipe line work, inside and outside of buildings, for conducting water, steam, gas, oil and other fluids. Comes in same sizes and for same pressures as listed above, and in 12 and 18-foot lengths.

THREADED CAST IRON PIPE

(OUTSIDE DIAMETER SAME AS STEEL PIPE)

SIZES 3 TO 12 INCHES

Can be cut, threaded, and fabricated with the ordinary tools of the piping trades

Centrifugally Cast: The experienced water-works man has long recognized the enduring qualities of underground *cast iron* water mains. Now he can have the same assurance of long-life and trouble-free service in his above-ground piping—inside and outside of municipal buildings. For, our *cast iron pipe in steel pipe sizes* has the same metal and other qualities as in our pipe made in accordance with Federal Specifications WW-P-421 for cast iron water main, 250 pounds working pressure.

JAMES B. CLOW & SONS

201-299 N. Talman Avenue **CHICAGO, ILLINOIS**

NATIONAL CAST IRON PIPE

(A Division of James B. Clow & Sons)

BIRMINGHAM, ALA.

Everything for the municipal water supply system

(*Continued from page 54*)

"Sabotage—How to Guard Against It" is a 12-page booklet written by Harry Desmond Farren and distributed by L. A. Safian, Regional Director, the National Foremen's Inst., 2685 University Ave., New York. It is designed for distribution to employees and is available at large lot prices ranging downward from the cost of 12½ cents each for copies in lots of 50 to 100 copies. The booklet is designed to impress upon employees the urgency and means of guarding against any subversive activities, to make workers safety conscious and help them acquire safe habits, and to help improve efficiency and morale on the industrial front.

Worm gear units for 3- and 3½-in. center distances are described in Leaflet E–1219 issued by the De Laval Steam Turbine Co., Trenton, N.J. These gears are supplied for either top or bottom drive and in ratios from 3⅝ to 1 up to 60 to 1, and are intended particularly for the operation of low-power machinery, such as small mixers, dryers, automatic furnaces and ovens, churns, conveyors and elevators, mechanical stokers, etc. The lower ratios can be used as speed-increasing gears where the maximum worm speed does not exceed 1750 rpm.

A WPB General Limitation Order (L–246) on Pumps was issued on April 12, and, though not of immediate application to the water works field, a few portions are of interest in view of possible developments:

A pump, for the purposes of the order, is defined as "any new, mechanically operated, rotating or positive displacement mechanism for raising, circulating or otherwise moving any liquid . . . ," with the following exceptions made for the order's application: (1) pumps manufactured for incorporation into other equipment made by the same manufacturer; (2) fuel injection pumps for internal combustion engines; (3) pumps for farm use as defined in General Limitation Order L–170; (4) service station type measuring and dispensing pumps; (5) vertical submerged reciprocating or turbine type pumps for oil wells; (6) certain pumps used solely in heating buildings; (7) sanitary pumps used in milk and egg processing; and (8) portable engine or motor driven construction pumps as covered

(*Continued on page 58*)

Filter Plant Equipment
COMPLETE LINE
Specializing in
Duplex Filter Bottoms
—
Write for Bulletin GFC-100
—
F. B. LEOPOLD CO., INC.
422 1st Ave. Pittsburgh, Pa.

Filter Sand and Gravel
WELL WASHED AND CAREFULLY GRADED TO ANY SPECIFICATION.
PROMPT SHIPMENT IN BULK OR IN BAGS OF 100 LB. EACH.
Inquiries Solicited.
Northern Gravel Co.
P. O. Box 307, Muscatine, Iowa

1879—ROSS—1879

AUTOMATIC VALVES

ALTITUDE VALVE

Controls elevation of water in tanks, basins and reservoirs

1. Single Acting
2. Double Acting

Maintains safe operating pressures for conduits, distribution and pump discharge

SURGE-RELIEF VALVE

REDUCING VALVE

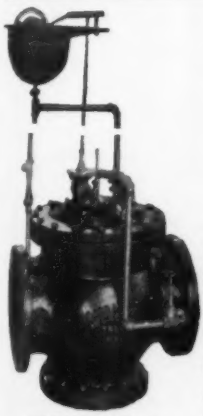
Maintains desired discharge pressure regardless of change in rate of flow

Regulates pressure in gravity and pump systems; between reservoirs and zones of different pressures, etc.

A self contained unit with three or more automatic controls

COMBINATION VALVE

Combination automatic control both directions through the valve.

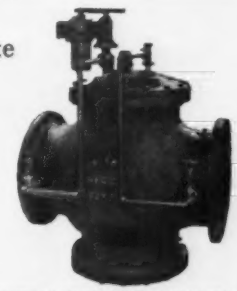


FLOAT VALVE

Maintains levels in tank, reservoir or basin

1. As direct acting
2. Pilot operated and with float traveling between two stops, for upper and lower limit of water elevation.

Electric remote control—solenoid or motor can be furnished



REMOTE CONTROL VALVE

Adapted for use as primary or secondary control on any of the hydraulically controlled or operated valves.

Packing Replacements for all Ross Valves Through Top of Valve

ROSS VALVE MFG. CO., INC., P. O. BOX 593, TROY, N. Y.

(*Continued from page 56*)

in "Contractors Pump Standards" of the Associated General Contractors of America.

A purchase order for pumps covered by the order must bear a preference rating of AA–5 or higher.

Under "Schedules of Specifications," the order says: "The War Production Board may at any time, and from time to time, issue schedules (by amendments to this order) establishing required specifications for pumps." Thus it appears that the water works field may expect modifications in pump construction similar to the modifications in valve and hydrants designs as described in the March 1943 JOURNAL.

A special purpose step-valve pump has been developed by Milton Roy Pumps, 1328 E. Mermaid Ave., Philadelphia, from whom further descriptions of this and other pumps are available. This pump delivers three liquids—one heavy, viscous material and two very light materials, at various rates of flow to control accurately the volume of each in compounding operations.

(*Continued on page 60*)

There are more Layne Wells and Pumps serving cities throughout the world than any other kind made. Layne Wells and Pumps are known as the most efficient ever built. They last longer and in upkeep cost have an amazingly fine record. They seldom need repairs of any nature. Write for latest catalogs, bulletins, folders, etc. No obligation. LAYNE & BOWLER, INC., Memphis, Tenn.

LAYNE WELLS & PUMPS

HIGH QUALITY VALVES HYDRANTS

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34. Address M & H Valve and Fittings Company, Anniston, Alabama.

CAST IRON PIPE

Manufactured in Sizes 2" to 96"—
A large stock constantly on hand,
facilitating prompt shipment.

Flanged Pipe

Special Castings

Flexible Joint Pipe

Bell and Spigot Pipe

Warren Spun Centrifugally Cast Iron Pipe

Short Body B. & S. Specials

Warren Foundry & Pipe Corp.

and

Warren Pipe Co. of Massachusetts, Inc.

Sales Offices
11 BROADWAY, NEW YORK, N. Y.
75 FEDERAL ST., BOSTON, MASS.

Works
PHILLIPSBURG, N. J.
EVERETT, MASS.

(*Continued from page 58*)

The Maryland-Delaware Water and Sewerage Assn. will hold its annual conference at the Lord Baltimore Hotel in Baltimore on May 13 and 14. "Substitutes and Alternatives Used in Wartime Construction and Operation" will be covered by Gustav J. Requardt, Robert T. Regester, Carl A. Hechmer, W. Clarke Gardner, George E. Finck and William B. Spencer. H. Lloyd Nelson will give priorities information. James R. McComas will speak on "War Sanitation—1861 through 1918," and Maj. J. J. Gilbert will cover the same subject for 1943. "Cathodic Protection" is the subject dealt with by Gordon L. O'Brien. Arthur H. Culler will describe the operation of the Frederick, Md., disposal works, and T. F. O'Connor will speak on "Rapid Method of Analyzing Flows in Distribution Systems," with discussion by Roy H. Ritter. Capt. C. W. Klassen will cover sanitary manpower problems and Thomas M. Latimer will describe valving a distribution system for emergency service. Norman D. Kenney, Whitman, Requardt and Smith, 1304 St. Paul St., Baltimore, is Chairman of the Md.-Del. Program Committee.

Micromax Pneumatic Control is described in a new edition of a catalog of these products, available from Leeds and Northrup Co., 4934 Stenton Avenue, Philadelphia. The Micromax Pneumatic Control is equipment for the regulation of pH, conductivity and other conditions, as well as temperature.

The Tremco Manufacturing Co., Cleveland, has issued a new bulletin, No. 25–B–241, on its Tremco Rust Preventatives which are used extensively to protect filters, meters, valves, water mains, etc. Tremflex and Tremgard are claimed by the company to answer all problems.

Tremflex is cheapest, most easily and quickly applied, and has the special faculty of never oxidizing, which makes it particularly desirable for water tanks, flumes and submerged equipment of any kind. It is said to withstand the widest variation in atmospheric temperatures, though not recommended for metal which directly contacts flame. It is immune to mild organic acids and to alkaline liquids. Gases, steam, brine and fumes encountered in most industrial operations do not affect it. Diluted nitric, sulfuric and hydrochloric acids, as well as dilute caustics have been resisted successfully, but not caustics at full strength nor concentrated organic acids.

Where painting for appearance is a present or future prospect, Tremco's proposal for labor saving is the use of Tremgard, a brown, translucent liquid that is not a paint and differs from typical metal primers. It has the physical property of penetrating rust and rendering it inactive. It can be used as a base for any selected color treatment or as a vehicle for aluminum paint, as well as for a permanent, final protection for interior metal.

(*Continued on page 62*)

Single stage, double suction pump with motor drive
Motor - mounted pump
Six stage centrifugal pump driven by electric motor
Section of De Laval - IMO oil pump
Steam turbine driven boiler feed pump
Clogless pump
DE LAVAL Products
Mixed - flow pump
Opposed impeller pump
Steam turbine driving alternator
Worm gear
Multistage compressor driven by multistage turbine
Flexible coupling
Direct current generators driven by geared turbine
Centrifugal pumps driven by geared turbine for large water works plant
State requirements so that appropriate catalog may be sent.
3228
DE LAVAL Steam Turbine Co.
TRENTON, N. J.
MANUFACTURERS OF TURBINES . . . STEAM, HYDRAULIC, PUMPS . . . CENTRIFUGAL, CLOGLESS, ROTARY DISPLACEMENT, MOTOR MOUNTED, MIXED FLOW, PROPELLER, PRIMING SYSTEMS, CENTRIFUGAL BLOWERS and COMPRESSORS, GEARS . . . WORM, HELICAL and FLEXIBLE COUPLINGS

VISIT OUR BOOTH NO. 30 AT THE HOTEL STATLER
DURING THE AWWA CONVENTION

(*Continued from page 60*)

"Air Raids" and allied headings—Shelters, Signals, Wardens, Protective Measures, etc.—fill four pages in the 1907-page 1942 edition of the Industrial Arts Index. Many of the publications indexed regularly in the Industrial Arts Index have expanded to meet present day need for information and this is reflected in the Index. The Index, which is a cumulative guide to published material on industrial arts, is issued by the H. W. Wilson Co., 950 University Ave., New York.

Customer meter reading cards are proving popular for use by route men who leave them when they cannot gain access to a meter. They leave the card with printed instructions for the consumer to mark it with the positions of the hands on the meter and drop the card in the mail. The Pittsburgh Equitable Meter Co. has announced that it will supply, without charge, suitable printing plates for the local water works to use in preparing cards for use with any Pittsburgh or National meter. Such requests should go to the nearest branch office or to the concern's Advertising Dept. at 400 N. Lexington Ave., Pittsburgh. Prospective users should specify whether the dial should be of the round reading or straight reading type, recording in gallons or cubic feet.

(*Continued on page 64*)

"STOP"
says
RUSTA RESTOR TRADE MARK REGISTERED
PATENTED PATS. PEND.
to
RUST IN STEEL TANKS
Rusta Restor is the positive method of preventing rust in all types of steel tanks and riser pipes (the electrical method)
RUSTA RESTOR CORP.
1440 W. State Street
FREMONT OHIO

EDSON
DIAPHRAGM PUMPS
Hand Operated--sizes 2", 2½", 3", 4"
Power Operated--sizes 3" and 4"
Open Discharge or Force Pump
Skid, Truck or Trailer Mounted
COMPLETE PUMP OUTFITS
Edson Pumps – Suction Hose
Brass Couplings – Bronze Clamps
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Also—Brass Hydrant Pumps
THE EDSON CORPORATION
Main Office and Works: 49 D St., South Boston, Mass.
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Serving the UNITED NATIONS and YOU

It is Activated Alum's privilege to be the favorite filter alum in many cities, from whom many active defense industries secure their water supplies.

Activated Alum and Blackalum are also favorite water treatment chemicals in many army posts—either securing their water supply from cities where Activated Alum or Blackalum is used or in their own water treatment plants.

We are proud to be a part of the water purification system of this nation and assure you that *service*, *quality* and *research* are your assurance of filter alums you can be proud to use in your plant.

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— WORKS —
ACTIVATED ALUM CORP.
CURTIS BAY, MARYLAND

— OFFICE —
516 NO. CHARLES STREET
BALTIMORE, MARYLAND

(*Continued from page 62*)

A new series of "Midget Adjust-O-Feeders" has been added to their line of proportioning pumps by Proportioneers, Inc., Providence, R.I. They are available in either plunger or diaphragm types. The plunger units range in capacities from 0 to 10 gal. per hr. and discharge against pressures ranging from 0 to 150 lb. The diaphragm pumps are built in capacities ranging from 0 to 7½ gal. per hr. and for pressures from 0 to 100 lb. Complete engineering details will be supplied by Proportioneers upon request.

The Rodney Hunt Machine Co. of Orange, Mass., has recently designed a completely new line of floor stand hoists for screw stem gates such as are used on canals, reservoirs, and other water controlling projects. The floor stands have selective two-speed gear ratios. They permit the gates to be stopped and held at any stage of opening. These new stands are made in a large range of sizes for different loads.

American Cast Iron Pipe Company of Birmingham, Ala., has received the Army-Navy "E" for exceptional performance in supplying war material for America's fighting forces. ACIPCO also flies the Minute Man flag awarded by the Treasury Dept.

A wartime substitute, reported in many ways superior to its peactime counterpart, is being utilized by Wailes Dove-Hermiston Corp., Westfield, N.J. Instead of a closed-head, light-gage steel drum for packaging their butuminous enamel, a new container of special heavy kraft paper is used. It is strong enough to hold the hot enamel during filling operations without danger of splitting apart, and it stands the wear of shipping, hauling, and storage. At the consumption end, it saves time and labor. The Kraft paper is readily stripped away from the solidified enamel by simply ripping the seams, which eliminates the axe-cutting necessary with steel drums and the nuisance of disposing of the used steel drums, as the paper container can be burned.

Adaptation of the ion-exchange process to industrial demineralizing problems is covered in a pamphlet and a reprint available from the Permutit Co., 330 West 42nd St., New York. The two-step ion-exchange process—involving removal of cations by a sulfonated coal (Zeo-Karb) and adsorption of formed acids by a solid organic amine (De-Acidite)—has been applied to producing ion-free water for use in such operations as the manufacturing of pharmaceutical products, synthetic organic materials, mirrors, synthetic rubber, various chemicals, and for feeding boilers.

Although this demineralizing process was originally developed for water treatment, its other uses are already manifold and it is expected that it will prove helpful in recovering useful materials from waste solutions and in purifying products during many wet process operations.

NEWS OF THE FIELD

As this issue of the JOURNAL goes to press, the outlook for the Cleveland Conference—June 15–18—is far better than was first anticipated for a 1943 meeting. The two hotels originally selected as housing headquarters, the Carter and the Statler, set aside 775 rooms for reservation by A.W.W.A. members. Arrangements have been made for 100 additional rooms at the Cleveland Hotel.

The Cleveland Convention Bureau stands ready to place late comers wherever the rooms are available.

The exhibits, while streamlined to cut out freight handling, will be fully informative. Here again, the original plans have been expanded and more space has been set up for new exhibits.

The program is in the hands of all members as well as non-member superintendents in the states adjacent to Cleveland. No better technical program has ever been provided.

In keeping with the times, entertainment is not being emphasized. A reception to President Wolman and the annual dinner will be held, one on Tuesday evening and the other on Thursday evening. Special entertainment events for the ladies will be arranged for Wednesday and Thursday afternoon. A hostess will be at the service of the ladies in their headquarters in Parlor C on the second floor of the Statler. There will be no golf tournament and no smoker or gala night. This is a war year and the Conference is being held in order to inform water works men how to serve the people better under war conditions and under war restrictions.

If the purpose of the meeting was anything other than that of gearing an essential industry to war service, it would not be held. These are serious times and the members of the American Water Works Association will gather in Cleveland in order to find ways to carry on their essential work of rendering better service to the public and of conserving materials for the war effort.

Please note a further change in the address of the A.W.W.A.
It now will read: American Water Works Association
500 Fifth Avenue
New York 18, N.Y.

What does the 18 mean? Simply that so many new employees are at work in the post office that the handling of mail is delayed by the newcomers' ignorance of district offices and their relation to street numbers. The number 18, therefore, indicates to the neophyte to what substation to forward your letter. When the letter reaches that sub-station, the postmen take over.

(*Continued on page 2*)

(*Continued from page 1*)

Simple—isn't it? The wonder is that it took a war to bring it about. The advantage is speed—time saving. *But,* if you do not use the code number 18, there will be a delay. Thus, in your own interest, as well as that of the A.W.W.A., see that the exact address as given above is used on letters addressed to this office. Incidentally, we failed to tell you much about the new location of the A.W.W.A. Office:

Early in the year, the building at 22 East 40th St. was sold to a concern that wanted all of the available tower space. The A.W.W.A. lease was due to expire during 1943, so the A.W.W.A. moved—and fast.

For some time, more office space had been needed. So the move was combined with expansion and half again as much room was found on the 21st floor of the building at 500 Fifth Avenue. There the Association headquarters will be for at least five years. At the corner of 5th Avenue and 42nd Street, just across the street from the New York Public Library and Bryant Park. (We know they are there—but we do not have much time to look at them. Once there was an "international" exhibition on that spot. At another time, a water works reservoir. Today, grass and pigeons and people.)

The office we now occupy was once the office of the Egyptian Consul General but there is nothing oriental about it now. Just a matter of fact busy office at one of the busiest street corners in the world!

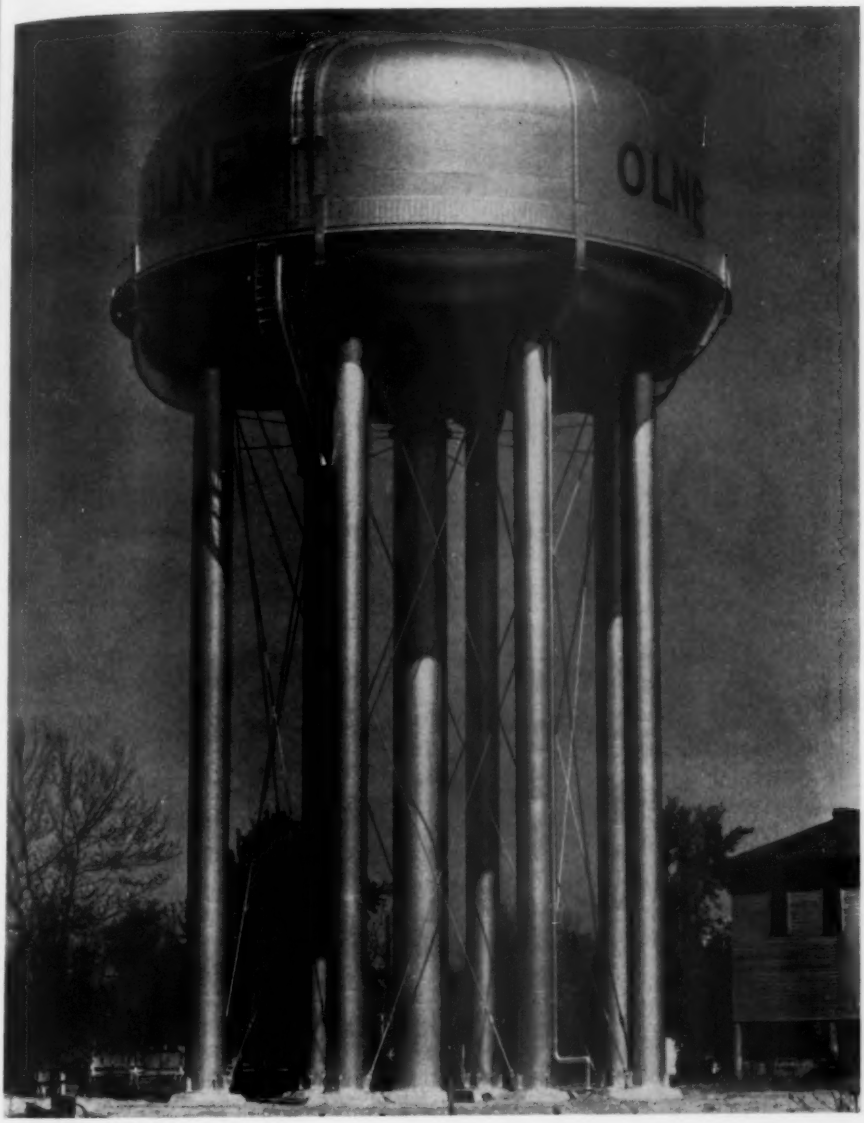
There is a Conference Room which out of town members are welcome to use when they are in New York. There is enough room for all the staff to work. All are at the service of A.W.W.A. and its members.

"Handbook of Emergency War Agencies," prepared by the Office of War Information, is a guide to Federal agencies all of whose present functions are devoted to war activities. It does not include the activities of the agencies established for other purposes, even though much of their work today has been integrated with the war program. The handbook is designed to help the public reach the services it needs with the emergency war agencies. Copies of the handbook may be obtained by writing to the Supt. of Documents, Govt. Printing Office, Washington, D.C., price 20 cents each.

To determine whether a piece of material or equipment should be used in its present form or put into war production in the form of scrap, the Special Projects Salvage Branch of the WPB's Salvage Division is publishing, bimonthly, "Available Used Material and Equipment Bulletin."

This publication, providing a ready guide to scrap determination, is distributed to approximately 3,000 government procurement offices and contractors, including the services and other war agencies such as Lend-Lease, Board of Economic Warfare, etc., covering most of the market for

(*Continued on page 4*)



Elevated tanks grow old . . . but not inefficient

This 400,000-gal. Colonial design tank is a year older every 12 months, but it still provides gravity water pressure in an Illinois water system just as efficiently as the day it was built.

CHICAGO BRIDGE & IRON COMPANY

BIRMINGHAM
PHILADELPHIA
SAN FRANCISCO
CHICAGO
NEW YORK
HOUSTON
WASHINGTON
TULSA
CLEVELAND

(*Continued from page 2*)

war uses. If any material or equipment listed in this bulletin can be put to use by these agencies, they contact the owner for purchase, and the listing is terminated. If the material or equipment has not been sold within a stipulated period (usually 60 days) after listing, the WPB's Regional Office takes every possible step to move the material as scrap.

The Citizens' Water Company of Burlington, Iowa, has been acquired by the City of Burlington and is now operating as the Burlington Municipal Waterworks. M. E. Driftmier, who was associated with the Citizens' Water Company, has been retained as Supt. for the plant.

In line with its policy of decentralization, the WPB has raised the dollar limit of PD–1A application processed in the field from $100 to $500, effective May 8. Beginning May 8, all PD–1A applications involving not more than $500 worth of material on which priority assistance is requested have been processed in either the District or Regional Offices according to the direction of the respective Regional Directors, except where specifically otherwise directed by the Director of the Distribution Bureau.

(*Continued on page 6*)

Charles E. Inman, Comr. and Supt. of the Warren, Ohio, water works, died on May 10, at the age of 78. He died at the Lakeside Hospital in Cleveland, having been taken there after being stricken during a week-end visit to see his son and daughter in Cleveland.

Although not in good health for the past year, he had continued actively at his duties, having just recently completed a total of 34 years as head of Warren's water supply. He first served in Warren's water works in 1898 when it was owned by the Warren Water & Light Co. and later by the Trumbull Public Service Co. He left the post of manager there in 1912 to go to Paterson, N.J., from which he was recalled in 1921 when the city purchased the water plant.

He was active in many civic affairs. He was a leader in work for underprivileged children, being a charter member of the Fresh Air Camp Corp. of the Warren Kiwanis Club. He was Pres. of the Kiwanis in 1934. He had served two years as Pres. of the Board of the Warren Y.M.C.A. and had been a member of the Y.M.C.A. Board of Directors for the past ten years. He was also very active in church work.

The Warren water works was known as one that reached a high peak of efficiency under his supervision. He had seen a softening plant constructed and the Mosquito Creek Reservoir developed as a new source in place of dependence on the Mahoning River. He had been a member of the A.W.W.A. since 1921.

THE FUTURE OF OZONE

is being defined today in the test tubes and equipment of our laboratory staff.

Among the better things America is fighting for, a better way is assured to produce potable and palatable drinking water—thanks to ozone and the current research and development program of this organization.

We invite every progressive water works man interested in a better taste, odor, and color removal process to discuss his problem with us.

Write for our new booklet "An Introduction to the Ozone Treatment of Water."

OZONE PROCESSES INCORPORATED

1500 WALNUT STREET, PHILADELPHIA, PA.

A wholly owned subsidiary of Welsbach Engineering and Management Corp.

(*Continued from page 4*)

In all other cases, PD–1A applications have been forwarded by each field office to Washington, D.C., for routing in accordance with the regular procedure for processing such forms in Washington. The new order means that now more than 80 per cent of all PD–1A applications will be handled entirely by the field offices.

Fred S. Childs, Cons. Engr., Clifton, N.J. was elected President of the State of New Jersey Board of Professional Engineers and Land Surveyors at the annual meeting of the Board. He will serve for the year 1943–44.

Maj. Harold B. Gotaas, Chief Engr., Div. of Health and Sanitation, Co-ordinator of Inter-American Affairs, has returned from South America, where he has been working on health and sanitation projects in different countries.

Fred Farr Jr. has been commissioned as 1st Lt. in the Army Sanitary Corps and temporarily assigned to the Div. of Health and Sanitation, Office of Co-ordinator of Inter-American Affairs, before planned service in one of the South American countries. He was formerly San. Engr. for the Indiana State Board of Health.

Joseph E. Young, formerly Supt. of the Fergus Falls, Minn., Water Dept., is now Asst. Plant Engr. for the National Synthetic Rubber Co. at Louisville, Ky. Water treatment will continue to occupy a considerable portion of his time, with the development of a 2-mgd. softening plant using both lime treatment and zeolite process.

Harry B. Bowman, formerly associated with the Township Engr. at Moorestown, N.J., on additions and general improvements to the water system there, was graduated from O.C.S. as Lieutenant on April 14 and is now stationed at Camp Claiborne. He was inducted last September.

Leverne D. Hudson, formerly Sr. San. Engr., Div. of San. Eng., Illinois State Dept. of Health, has been granted a commission as Lt. in

(*Continued on page 8*)

THE COAGULANT
THAT CUTS COSTS

Write today for actual case histories
of water plants now using Ferri-Floc.

TENNESSEE CORPORATION
Ferri-Floc
FERRIC SULPHATE

TENNESSEE CORPORATION
ATLANTA, GEORGIA LOCKLAND, OHIO

CAST IRON PIPE

Manufactured in Sizes 2" to 96"—
A large stock constantly on hand,
facilitating prompt shipment.

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Short Body B. & S. Specials

Warren Foundry & Pipe Corp.

and

Warren Pipe Co. of Massachusetts, Inc.

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75 FEDERAL ST., BOSTON, MASS.

Works
PHILLIPSBURG, N. J.
EVERETT, MASS.

(*Continued from page 6*)

the Sanitary Corps and is assigned for duty in Colombia with the Inter-American Affairs Commission.

Eugene T. Cranch, who recently resigned as head of the New Rochelle, N.Y., Water Co., has been appointed Director of Public Works at New Rochelle. He has been at New Rochelle for the past 16 years. Previously he was Asst. City Engr. at Rochester, N.Y. He began service as a private in the World War and rose to the rank of lieutenant. After the war he was City San. Engr. for Port Arthur, Texas, then Assoc. Prof. at the Univ. of Kansas, and later Supt. of Water at Petersburg, Va.

Emanuel H. Pearl is now assigned as San. Engr. to the U.S. District Engineer Office at Tulsa, Okla. Since March 1942 he was in the 8th Corps Area as San. Engr. in connection with the operation of water and sewerage utilities at Army posts, before being commissioned in the Sanitary Corps in September 1942. From 1934 to 1940 he was Principal Asst. and Field Engr. with the Engineering Div. of the Texas State Dept. of Health and later was with the U.S.P.H.S. Ohio River Pollution Survey before being transferred to the Washington, D.C., Office of the Quartermaster Corps, when he assisted in the design of the Pentagon Building's sewage treatment plant.

(*Continued on page 10*)

AT WAR'S END

replace substitute pipe with time-tested Mono-Cast Centrifugal Pipe. Manufactured according to the recently adopted ASA Law of Design or other specifications.

AMERICAN CAST IRON PIPE COMPANY

BIRMINGHAM, ALABAMA

Sales Offices in Principal Cities

Vogt Fire Hydrants

Standard—
"Traffic Model"—
Flush Type—
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Type

Vogt Gate Valves

Non-Rising Stem—Outside Screw and Yoke—Hub End—Flanged End—Ends to Fit any Type Pipe.

Also—Floor Stands, Shear Gates—Tapping Sleeves and Valves, Flap Valves and Mud Valves.

Vogt Brothers Mfg. Co.
INCORPORATED
MAIN AT 14th ST.
LOUISVILLE KENTUCKY

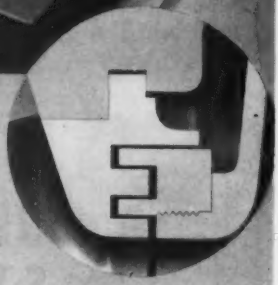
More than 2½% over guarantee

The **DE LAVAL MOTOR DRIVEN PUMP** in the foreground was supplied to a Canadian public utility under a guarantee to deliver 4000 Imperial gallons per minute against a total head of 217 ft. with a wire-to-water efficiency of 78 per cent.

In the official acceptance test by the customer's consulting engineer, this was exceeded by more than 2½ per cent.

The Utility has now ordered for standby service a similar De Laval pump of 5000 Imperial gallons capacity against the same head and driven by a gasoline engine.

The sustained high efficiency of De Laval pumps is made possible by correct hydraulic design and, in large part, by the DE LAVAL LABYRINTH WEARING RINGS, without resort to the close clearances necessary with flat rings. These, and other parts subject to wear, are easily renewable, as they are made to limit gages to be interchangeable.



Cross section of De Laval double labyrinth wearing rings; one ring is held by the casing, while the other is screwed onto the impeller.

2588

DE LAVAL *Steam Turbine Co.*
TRENTON, N.J.

MANUFACTURERS OF TURBINES · STEAM, HYDRAULIC PUMPS · CENTRIFUGAL CLOSELY ROTARY DISPLACEMENT · MOTOR MOUNTED · MIXED FLOW · PROPELLER · PRIMING SYSTEMS · CENTRIFUGAL BLOWERS and COMPRESSORS GEARS · WORM, HELICAL and FLEXIBLE COUPLINGS

VISIT OUR BOOTH NO. 30 AT THE HOTEL STATLER
DURING THE AWWA CONVENTION

(*Continued from page 8*)

Herman G. Baity, who is Asst. to the San. Engr. of the Brazilian Government, and who was formerly Prof. of San. Eng. at the Univ. of North Carolina, has written Dr. Milton J. Rosenau at the University, describing his work superintending sanitary installations in connection with rubber production enterprises. He writes from Manaos which he reminds us is a modern city with fine buildings, trolleys, large stores and commercial establishments, several daily papers, automobiles and numerous garages, good restaurants, numerous clubs, and the latest movies from Hollywood. Also, he says he has enjoyed lots of cool weather though only a very few degrees from the equator. He reports that Mrs. Baity and his two sons are in Rio de Janeiro.

Harvey F. Ludwig, Asst. San. Engr. with the U.S. Public Health Service, has shifted his headquarters from Atlanta, Ga., to New Orleans, from which he will operate as Supervisor of one of the U.S.P.H.S. mobile units.

A. Elliott Kimerly, Cons. San. Engr. of Columbus, Ohio, is now serving as Principal Asst. Engr. with the Ohio Dept. of Health.

(*Continued on page 12*)

RUST RUINS STEEL TANKS

They Cannot Be Replaced NOW!

"RUSTOP" *Cleans Old Tanks* and *Keeps New Tanks Clean*

Get details and estimates on THE APPROVED METHOD

Booth 10—Cleveland Conference

RUSTOP THE CATHODIC SYSTEM OF CORROSION PREVENTION

ELECTRO RUST-PROOFING CO.
DAYTON • OHIO

Meter Boxes
Meter Testers
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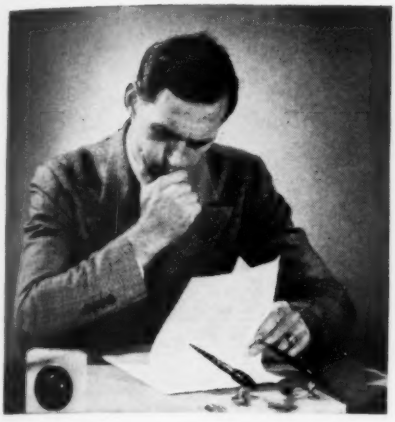
Valve Boxes
Service Boxes
Manhole Covers

Street Castings
Special Castings

H. W. CLARK COMPANY
Mattoon, Illinois, U. S. A.

To Waterworks Engineers
WHO ARE PLANNING AHEAD



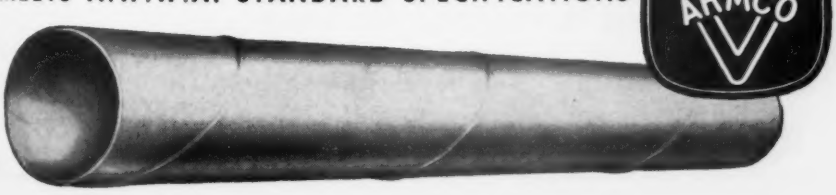
America will need your plans. Millions of our fighting men and still other millions of war workers must someday turn to new jobs in a new and different world. You can help by planning now to avert a serious letdown when Victory is won.

No doubt you are thinking of many projects that not only would improve your municipal water systems, but even more important would provide jobs for returning service men and workers now in war industries. Industry is already laying plans to absorb its share of these people. If federal, state and municipal governments have their plans ready, widespread unemployment will be less of a problem to America.

Naturally you will want to make your postwar dollars go as far as possible. For instance, you will want the efficiency and low-cost maintenance you can be assured of when you specify ARMCO Spiral Welded Steel Pipe. Its advantages are readily seen. Fifty-foot lengths mean fewer joints, less assembly work. A spun enamel lining assures high flow capacity, prevents tuberculation and recurrent cleaning troubles. There is no danger of shattering or sudden breaks. Sizes range from 6 to 36 inches with wall thicknesses in any diameter to fit specific jobs.

If you can't get ARMCO Spiral Welded Pipe now for all requirements, remember that Victory comes first. The steel is needed for ARMCO Pipe in ships, ordnance and construction for the fighting fronts. The American Rolling Mill Company, Pipe Sales Division, 1271 Curtis Street, Middletown, Ohio.

ARMCO STEEL PIPE
MEETS A.W.W.A. STANDARD SPECIFICATIONS



(*Continued from page 10*)

H. C. Clare, former Director of the Bureau of Industrial Hygiene, has been appointed Director of the Div. of Public Health Eng. (formerly the Div. of San. Eng.), State Dept. of Health, Boise, Idaho. He succeeds W. V. Leonard, who resigned that post March 31.

James L. Sanborn, Cons. Engr., formerly with headquarters at 30 Church St., is now located at 101 Park Ave., New York.

Robert P. Lowe, former Acting Regional San. Engr. for the War Relocation Authority, San Francisco, has been made San. Engr. at Washington, D.C. He has supervision over water, sewage and general sanitation on eleven Relocation Centers, located in seven different states and involving 125,000 people.

From 1937 to 1940, Lowe was Civ. Engr. for the Hamaka Mill Co., Paauillo, Hawaii. In the latter year, he came to California where he worked as a consulting engineer, first with Clyde C. Kennedy, San. Engr. in San Francisco, and then with Donald R. Warren, Struc. Engr. in Los Angeles.

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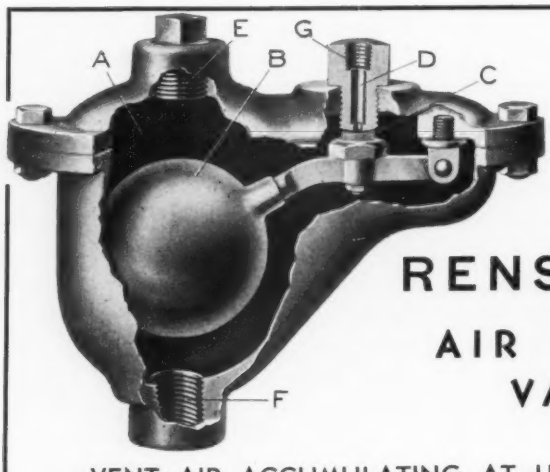


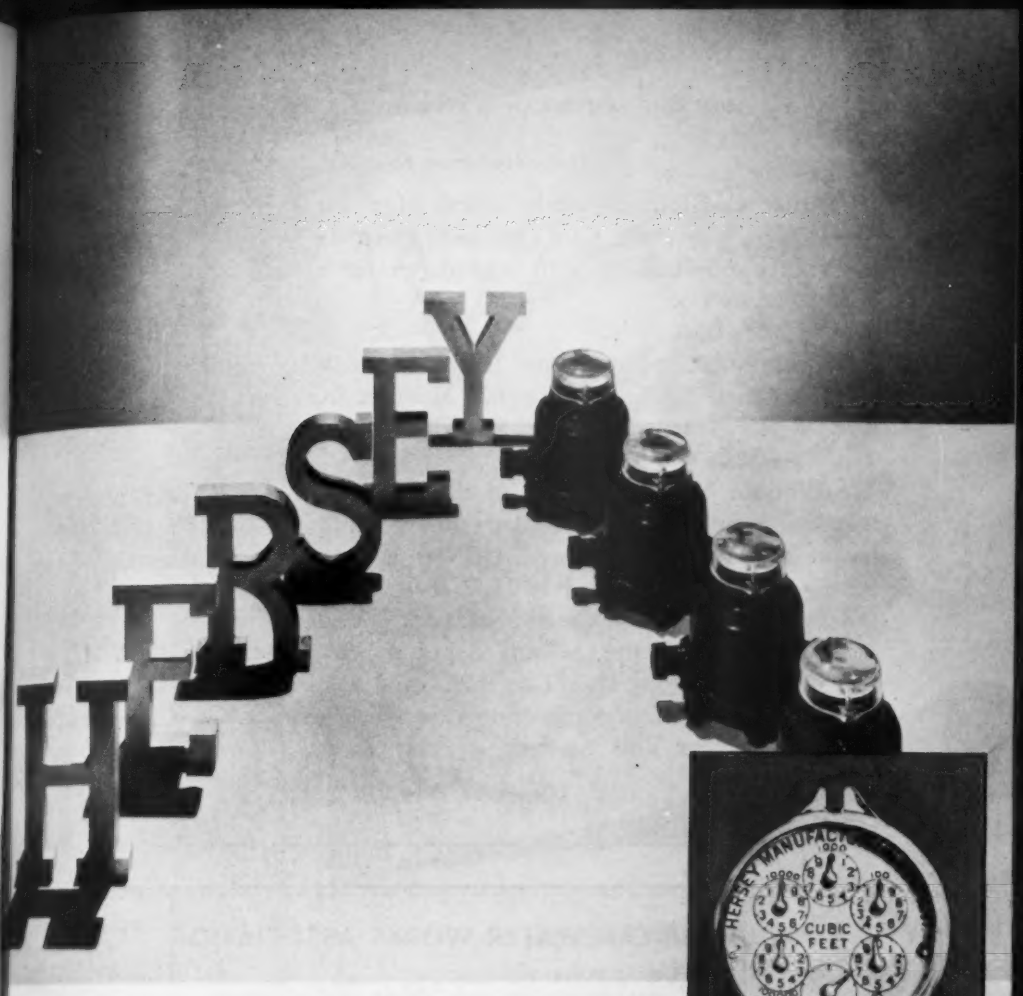
RENSSELAER

AIR RELEASE VALVES

VENT AIR ACCUMULATING AT HIGH POINTS IN PIPE LINES—ASSURING MAXIMUM FLOW THRU ELIMINATION OF AIR POCKETS

Write for Bulletin Q

RENSSELAER VALVE CO., TROY, N. Y.



HERSEY IRON CASE WATER METERS have been approved by water works officials everywhere. The real feature that has won their universal approbation is the new Magni-Vision* All Glass Bonnet.

The results of this improvement are greater illumination and magnification of the face of the dial and faster and more accurate reading.

A special circular describing this feature will be mailed upon request.

HERSEY MANUFACTURING COMPANY

SOUTH BOSTON, MASS.

BRANCH OFFICES: NEW YORK PORTLAND, ORE. PHILADELPHIA ATLANTA DALLAS CHICAGO SAN FRANCISCO LOS ANGELES

*Patented by a Hersey engineer June 4, 1907

(*Continued from page 12*)

Amer C. Stolp, formerly Local Mgr. for the California Water Service Co., Marysville, Calif., has been given the new post of Dist. Mgr. for Visalia and Hanford, with headquarters at Visalia, for the California Water Service Co.

Clinton L. Bogert, Cons. Engr., has announced the removal of his offices from 30 Church St. to 624 Madison Ave., New York, where the new telephone number is PLaza 3-9550.

Wallace T. Miller, Supt. of the Ossining, N.Y., Water System, has been granted a leave-of-absence for the duration, and is now a Lieutenant in the Civ. Eng. Corps, USNR, at Camp Peary, Magruder, Va. Acting Supt. at Ossining will be H. Warren Terry, formerly associated with the Consolidated Edison Co. of New York.

Before going to the Ossining Board of Water Comrs. in 1932, Miller was with Applebee & Slater, Civ. Engrs. and Surveyors, New York, where he had varied sanitary engineering experience. He is Vice-Chairman of A.W.W.A.'s New York Section.

(*Continued on page 16*)

AMERICAN WATER WORKS ASSOCIATION

Conference on War Winning Water Works Operation

Cleveland - June 15-18, 1943

MAKE RESERVATIONS NOW BY WRITING DIRECTLY TO:

CARTER HOTEL	*or*	CLEVELAND HOTEL
$3.50, 4.00, 4.50	***Single Rooms***	**$4.00, 4.50, 5.00**
$5.50, 6.00, 6.50	***Double Rooms (for two)***	**$6.00, 6.50, 7.00**
$6.00, 8.00	***Twin Bedrooms (for two)***	**$7.00, 8.00, 9.00, 10.00**

Although the above are available on May 24, you must act immediately in getting the reservation you will need for your stay in Cleveland during the A.W.W.A. Conference—June 15–18.

FOR BEST RESERVATIONS, WRITE NOW—
REFER SPECIFICALLY AND CLEARLY TO ABOVE SCHEDULE

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CLEAN
INSPECT
PAINT
REPAIR
A NECESSARY WARTIME
PRESCRIPTION, ASSURING CON-
TINUED BEST SERVICE FROM YOUR
Elevated Steel Tanks
by-
PITTSBURGH
•DES MOINES
Check your tank's condition regularly—inside and out; have your local riggers and painters keep maintenance up to the mark—and your present tank will see you through!
For paint specifications and detailed recommendations, write—without obligation.
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PITTSBURGH, PA., 3424 NEVILLE ISLAND—DES MOINES, IOWA, 925 TUTTLE STREET
NEW YORK, ROOM 921, 270 BROADWAY . . . CHICAGO, 1228 FIRST NATIONAL BANK BUILDING
DALLAS, 1229 PRAETORIAN BUILDING . . . SAN FRANCISCO, 631 RIALTO BUILDING
SEATTLE 1132 EIGHTH AVENUE SOUTH

(*Continued from page 14*)

Bernal H. Swab is now with the Institute of Inter-American Affairs on assignment to Brazil as a Principal San. Engr. with headquarters at Belem-Para and Manaos. He was formerly at Raleigh, N.C.

W. S. Kuttler, formerly a San. Engr. with the State Board of Health, Tampa, Fla., is now Area Engr. on Malaria Control in War Areas in the territory of Laurinburg, N.C. He is also associated with the N.C. State Board of Health. Mr. Kuttler has served in the Eng. Dept. and with the Construction Quartermaster of the Federal Govt.

A. Leland Glidden, former Pres. of the New Canaan, Conn., Water Co. enlisted last October in the ski troops, and is now a corporal. He is stationed at Camp Hale, Colo., which is at an elevation of 10,000 ft.—the highest U.S. Army Cantonment. A good deal of the time has been spent maneuvering on skis about the snow-covered peaks of the Colorado Rockies.

Corp. Glidden has also served as Pres. of the Sharon, Conn., Water Co. and of the Renney Water Collector Corp., which pioneered horizontal well drilling for water. He has also been associated with Stone and Webster Service Corp.

(*Continued on page 18*)

PERFORMANCE
that backs up
Promise

Tegul-MINERALEAD delivers performance, instead of alibis; trouble-free joints, instead of excuses; the comfortable assurance that you are not using a strategic war metal, for non-war purposes • You'll like the ease with which *Tegul*-MINERALEAD works; its faster sealing of that initial leakage; the absence of need of skilled labor; the speed it contributes to your line-laying • In short, you'll like everything about *Tegul*-MINERALEAD, including its sound, all-round economies.

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THE ATLAS MINERAL PRODUCTS COMPANY of PA.
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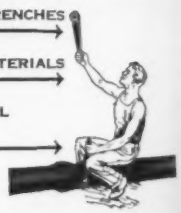
Tegul-MINERALEAD
For Jointing Bell & Spigot Main

3 *Money, Time and Labor Saving Features of*
UNIVERSAL
CAST IRON PIPE

LAID WITH ONLY WRENCHES
NO CAULKING MATERIALS
NO GASKETS. NO BELL HOLES TO DIG.



For water supply, fire protection systems, sewage disposal systems, industrial, and irrigation. Flexible.

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THE CENTRAL FOUNDRY COMPANY
386 FOURTH AVENUE, NEW YORK, N. Y.

Gentlemen: Send us information and catalog on UNIVERSAL CAST IRON PIPE.

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CENTRIFUGAL PUMPS	STEAM AND POWER PUMPS
TURBINE WELL PUMPS	SUMP AND DRAINAGE PUMPS
DIESEL ENGINES	GAS ENGINES
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STEAM TURBINES	SPEED-CHANGE GEARS
WATER SOFTENERS	PRESSURE FILTERS

WATER METERS

A complete line of water meters of every type is manufactured by Worthington-Gamon Meter Company, a subsidiary of Worthington Pump and Machinery Corporation.

WORTHINGTON PUMP AND MACHINERY CORPORATION
WORTHINGTON-GAMON METER COMPANY

General Offices: HARRISON, NEW JERSEY — Offices and Representatives in Principal Cities

IC3-10

(*Continued from page 16*)

John E. Kiker Jr., for six years Dist. San. Engr. with the N.Y. State Dept. of Health, Poughkeepsie, N.Y. is now a Captain in the San. Corps, working as Asst. to the Chief, Medical Branch, Fourth Service Command, Atlanta, Ga. Before joining the N.Y. State Health Dept., Capt. Kiker worked for four years in Indo-China on the construction, operation and design of water purification plants with a subsidiary of the Layne-New York Co.

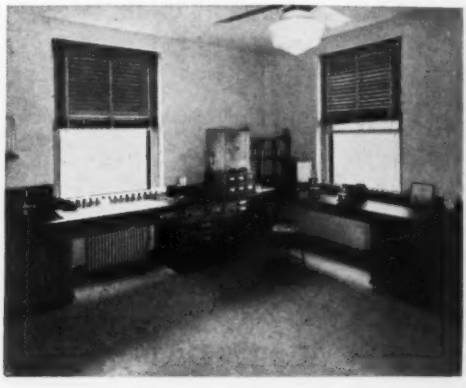
Louis A. Geupel, former Supt., Evansville, Ind., Water Dept., is now Principal Engr. for the Water Div. of WPB's Office of War Utilities, Washington, D.C.

Thirteen youthful scientists in Ridgewood, N.J., are now analyzing water as their contribution to civilian defense. Nine seniors and four juniors from the local high school have received special training and are testing water samples one evening a week. Longer hours are devoted to analyzing soil samples for the County Agricultural Agent, in conjunction with a local Victory Garden program.

(*Continued on page 20*)

SHELDON

LABORATORY FURNITURE FOR CONTROL



★ Sheldon does more than manufacture a complete line of Laboratory Furniture. Experienced Sheldon Planning and Installation Engineers will help you plan efficient facilities for laboratory control. They also will assist you in selecting and installing furniture which will meet your needs efficiently and economically.

Write today for Catalog. Ask that our Engineers call

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MANUFACTURERS OF WOOD & METAL LABORATORY FURNITURE

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IMPORTANT

Public Health must be maintained!

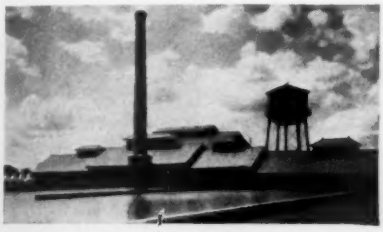
The necessity of maintaining public health in war time is self-evident. Municipal officers in charge of water purification and sewage disposal have a vital responsibility in guarding the nation's health, that should not be underestimated as a contributing factor to final victory.

However, the problems of maintaining public health are *becoming increasingly difficult in the face of material shortages and transportation handicaps.* In order to ease this situation in regard to *Aluminum Sulfate* as much as possible, won't you help us by observing the following simple rules?

1. Order "maximum" cars to conserve transportation space and reduce the haulage necessary to serve your needs.
2. Place your orders as far ahead as you can so that we may schedule our production on an efficient basis.

Why Most American Cities Prefer General Chemical Aluminum Sulfate

General Chemical Aluminum Sulfate is an especially developed "Alum." High quality and constant uniformity have given it *a time-tested* reputation among water works engineers and sewage plant operators.



★ **FOR WATER WORKS**

1. Makes water crystal clear.
2. Longer filter runs are obtainable.
3. Is economical, used properly will conserve chlorine supplies . . . because it does not require oxidation to make it effective.
4. Superior in tests against other coagulants.
5. High in quality, its constant uniformity can be counted upon.

★ **FOR SEWAGE PLANTS**

1. Clean, easy to handle and economical to use.
2. Simple application, requires only low cost feeding apparatus and minimum attention.
3. Clear, colorless effluents are possible.
4. Precipitated sludge digests readily.
5. Treated digested sludge dries quickly, without odor.

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Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh Providence (R. I.) • St. Louis • Utica (N. Y.)

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Pacific Northwest Technical Service Offices: Wenatchee (Wash.) • Yakima (Wash.)

In Canada: The Nichols Chemical Co., Ltd. • Montreal • Toronto • Vancouver

(*Continued from page 18*)

A "Code for Pressure Piping" has recently been approved in revised form as B31.1–1942 by the American Standards Association.

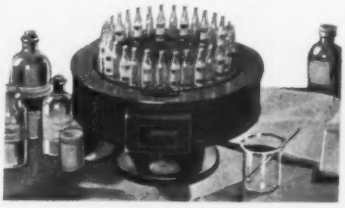
There have been many developments and advances in piping practices since the code was first issued as a tentative standard six years ago. Welded joints have assumed increasing importance, standard dimensions for various types of fittings have been established and come into common use, new rules and qualification tests have been formulated, and refrigeration piping has developed because of the growth of air conditioning and the older refrigeration applications. These and other factors have been among the changes which ASA sectional committee B31 has considered and incorporated in the new standard in order to keep it abreast of the times.

The new code covers (1) Power Piping, (2) Gas and Air Piping, (3) Oil Piping, (4) District Heating Piping, (5) Refrigeration Piping, (6) Fabrication Details, and (7) Materials and Identification. It is published in a $5\frac{1}{2} \times 8$-in. bound book (*227* pp.) and is sold at $2 per single copy.

Special quantity prices on orders of 25 or more copies of the Code for Pressure Piping are available upon request to the ASA.

(*Continued on page 22*)

LaMOTTE CHLORINE COMPARATOR
(ROULETTE TYPE)

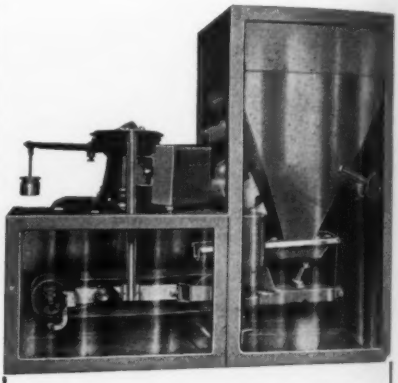


Designed as a permanent installation in the control of chlorine dosage. The roulette unit is 13" in diameter and 8" high. It contains an internal dalite reading arrangement and all standards are in the revolving drum, permitting the operator to obtain readings in a minimum of time and under uniform light conditions, day or night.

The standard model covers the range of chlorine concentration from 0 to 1.0 ppm., in intervals of 0.1 ppm. High concentrations can be measured by diluting the sample. Full instructions are furnished.

The unit comes complete with color standards, reagent solution, two calibrated comparison tubes, extension cord and switch, price $56.00 f.o.b. Towson.

LaMOTTE CHEMICAL PRODUCTS COMPANY
Dept. AWA TOWSON, BALTIMORE, MD.



The accurate way to feed dry chemicals is *by weight*

SYNTRON

"Weigh-Flow"
Dry Feeder Machine

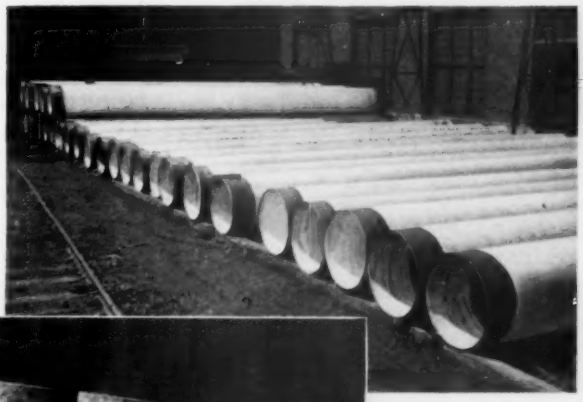
eliminates all guess work—and feeds exactly the right amount—by weight

SYNTRON CO.
428 Lexington Ave. Homer City, Pa.

ALCO

ELECTRIC WELDED STEEL PIPE

PLAIN LENGTHS OR SPECIALS



36" O. D. Piping Ready for Loading.

Special 60" O. D. Header.

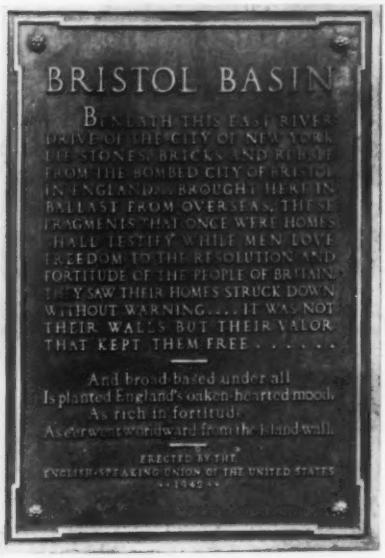
Alco Electric Welded Steel Pipe Insures Against Leakage and Breakage

AMERICAN LOCOMOTIVE COMPANY

ALCO PRODUCTS DIVISION

30 CHURCH ST., NEW YORK, N. Y. DUNKIRK, N. Y.

(*Continued from page 20*)


BRISTOL BASIN
BENEATH THIS EAST RIVER
DRIVE OF THE CITY OF NEW YORK
LIE STONES, BRICKS AND RUBBLE
FROM THE BOMBED CITY OF BRISTOL
IN ENGLAND, BROUGHT HERE IN
BALLAST FROM OVER SEAS. THESE
FRAGMENTS THAT ONCE WERE HOMES
SHALL TESTIFY WHILE MEN LOVE
FREEDOM TO THE RESOLUTION AND
FORTITUDE OF THE PEOPLE OF BRITAIN
WHO SAW THEIR HOMES STRUCK DOWN
WITHOUT WARNING . . . IT WAS NOT
THEIR WALLS BUT THEIR VALOR
THAT KEPT THEM FREE . . . . . .
And broad-based under all
Is planted England's oaken-hearted mood,
As rich in fortitude
As ever toward from the island wall.
ERECTED BY THE
ENGLISH-SPEAKING UNION OF THE UNITED STATES
1942

A good-neighborly byproduct of the activities of the National Technological Civil Protection Committee, appointed by the Secy. of War, was the christening of a small-boat basin on the East River Drive, New York City. Walter D. Binger, Chairman of the Committee and Comr. of Borough Works, Manhattan, happened to be informed in Bristol, Eng., when he visited England as Expert Consultant to the Secy. of War, that rubble from blitzed sections of that city had been transported to this country as ballast and was being used as fill in the East River Drive construction. He was inspired to call one of the landings on the drive Bristol Basin and the English speaking Union of the United States erected a placque explaining the name and illustrated above.

All this happened a year and more ago. A Christmas letter from Mr. Binger to E. Graham Clark, Secy. of the Institution of Civil Engrs. in Great Britain, enclosed photos of Bristol Basin and the placque. At the instigation of Mr. Clerk, larger photographs plus descriptive material were supplied by Mr. Binger. They received wide publicity in the British press and on BBC. Mr. Clark requested an illustrated lecture on the construction of the East River Drive, saying,

"These lectures on engineering works carried out in America are extremely popular here, and I have ample opportunities of loaning them out to our Local Associations throughout the country as well as to other provincial Engineering Societies. At the present time when it is difficult to get papers from our members in this country, these lectures are particularly useful, and one on the East River Drive would undoubtedly be of great interest in view of the novelty of the work."

(*Continued on page 44*)

Zone Numbers in Addresses Speed Mail Deliveries

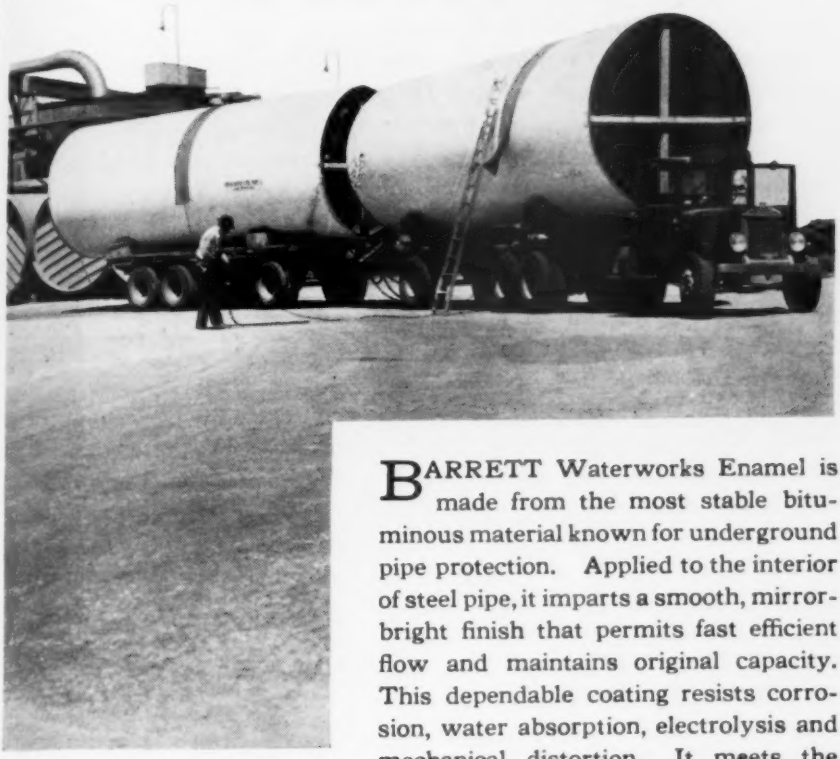
If your city is one of the 178 large cities already chosen by the Post Office Dept. for the number zoning system, begin using the proper number after your city's name and before the state abbreviation in your address—and send notice of your number to the A.W.W.A., so that your mailings will reach you more promptly.

As described on page 1 of the News of the Field, the A.W.W.A.'s address now is:

500 Fifth Avenue, New York 18, N. Y.

LONG PROTECTION

FOR LARGE CAPACITY



Owens River Aqueduct
Los Angeles Dept. Water and Power

BARRETT Waterworks Enamel is made from the most stable bituminous material known for underground pipe protection. Applied to the interior of steel pipe, it imparts a smooth, mirror-bright finish that permits fast efficient flow and maintains original capacity. This dependable coating resists corrosion, water absorption, electrolysis and mechanical distortion. It meets the American Water Works Association's standard specifications, 7A.5 and 7A.6.

Use of Barrett Waterworks Enamels is soundly economical since it increases the useful life of the pipe and decreases the need for repairs or replacement.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK

FIELD SERVICE: The Barrett Waterworks Service Department and staff of Field Service men stand ready to provide a broad measure of cooperation. These services include consultation on technical details, training of crew, and job inspection.

Barrett WATERWORKS ENAMEL

(*Continued from page 22*)

REPORT OF INDIANA SECTION MEETING

The 36th annual meeting of the Indiana Section of the A.W.W.A., held in affiliation with the Indiana State Board of Health, convened on April 29–30 in the Antlers Hotel, Indianapolis.

Registration totaled 201 for the two-day session. Of the 171 members of the section, 66 registered, making a Henshaw Cup figure of 38.6 per cent. The meeting was attended by a number of officers and enlisted men from the various military posts around Indianapolis and the state in general. War and other industrial plants were also represented.

Officers elected at the closing luncheon were H. W. Niemeyer, Indianapolis, Chairman; Clarence Adams, New Albany, Vice-Chairman; C. E. Bechert, Indianapolis, Secy.-Treas.; Leo Louis, Indianapolis, Asst. Secy.; and M. H. Schwartz, Vincennes, A.W.W.A. Director.

Cecil K. Calvert, Indianapolis, was named for the George W. Fuller award in recognition of his long and faithful services in the interests of the Indiana Section and of the A.W.W.A., and outstanding work in the field of water purification and taste control.

A.W.W.A. Secretary Harry E. Jordan addressed the convention at the Friday luncheon, summarizing the problems and conditions confronting the water works industry today as "manpower, materials, and mutual aid." Transfer of trained personnel into the armed forces and into high-paying war jobs has made the manpower situation in the field of sanitary engineering rather precarious. The conservation of materials by the industry should be commended, inasmuch as they had used less than 50 per cent of their allowable quotas; however, under-maintenance of the property should not be permitted to reach such a degree as to endanger its ability to perform its public service adequately. Mutual aid, an intelligent and permanent part of water and sewerage maintenance, has its place in war or in peace; so far in the current emergency, there has been no definite governmental recognition or usage of the plan.

Wm. A. Hanley, Chief Engr., Eli Lilly Co., spoke at the Thursday banquet on various phases of the war effort and the importance of preserving the principles of free enterprise in this country. Entertainment was provided by the Stephen Foster Quartet, sponsored by J. K. Lilly.

General Robert H. Tyndall, Mayor of Indianapolis, welcomed the registrants at the Thursday luncheon.

A brief review of the convention program follows:

"Employee-Employer Relations" by C. E. Wood, Personnel Director, E. C. Atkins Co.: There should be no great mystery attached to industrial relations today. An application of the Golden Rule would solve a lot of the seemingly insurmountable problems confronting industry in its dealings with employees.

(*Continued on page 46*)

GRAVER *Stand Pipes*

STAND THE TEST OF TIME AND SERVICE

★

All over the country you'll find Graver-built Standpipes serving communities both large and small. Some will show the marks of recent construction, while others—many of them—have been in constant use for more than a quarter of a century and are still good for years to come.

Graver builds standpipes of any capacity, either welded or riveted, to meet the most rigid municipal or industrial requirements. If today's increasing demands are putting a strain on your present equipment, consult Graver. We will gladly discuss your problems with you and submit quotations without obligation.

Write Graver—today.

Graver-built standpipe 2,500,000 gal. capacity.

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GRAVER TANK & MFG. CO., INC.

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EAST CHICAGO, IND.
CABLE ADDRESS — GRATANK

NEW YORK
CATASAUQUA, PA.
CHICAGO
TULSA

43-24-W

(*Continued from page 44*)

"Meter Reading Under Present Conditions" by W. C. Shoemaker, Mgr., Richmond, Ind., Water Works Corp.: Meter readers have been particularly susceptible to the selective service draft calls and also to high-paying war jobs and their departure has caused a real problem. He cited the various methods being used to offset the reader shortage, such as meter reading calendars, mailing cards, part-time work by high school boys, use of physically-handicapped men, averaging of accounts, and of course, women. Gary, it was mentioned, is using 14 women readers and is well satisfied with their performance.

"Practical Applications of In-Service Training" by Prof. C. H. Lawshe, Purdue Univ.: Training of workers is a good deal broader job than imagined. Two types of training, group and individual, were compared and some on-the-spot demonstrations of training were given with convention-ites being the "job-seekers." The four principles of sound instruction were (1) prepare the learner; (2) present the job or operation by both telling and showing; (3) have the learner perform the job, telling and showing what he does; and (4) follow up the learner, putting him on his own but checking frequently. If the learner hasn't learned, he said, the instructor hasn't taught.

"New Drinking Water Standards" by C. K. Calvert, Supt. of Purif., Indianapolis Water Co.: The change from the use of 10-ml. portions of tap water to 100-ml. is unlikely because of the effect of war on materials available. Under the standard, a water may contain something under 2.2 of coli-form organisms if 10-ml. portions are used and 0.92 if 100-ml. portions are used, the results being expressed as M.P.N. The difference is not great. On a percentage basis, the permissible figures are 1.0 and 0.6 respectively. Any water, chlorinated in modern fashion, will meet the same standards, whether 10-ml. or 100-ml. portions are used. With our present knowledge of chlorination and with modern chlorinators, water can be produced almost bacteria-free.

Discussion by B. H. Jeup, Chem. Engr., Water Laboratories, Indiana State Board of Health, centered on the adoption of standards for water

(*Continued on page 48*)

ZECO GREENSAND ZEOLITE

Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

ZEOLITE CHEMICAL CO.
90 WEST STREET **NEW YORK, N. Y.**

HYDRO-TITE

AND DRY BRAIDED FIBREX

A DEPENDABLE SELF-CAULKING JOINT COMPOUND FOR CAST IRON BELL AND SPIGOT WATER MAINS

HYDRO-TITE is a self-caulking sulphur base jointing compound used to joint bell and spigot cast iron water mains and soil pipe. It comes in powder form which insures uniformity and quick melting.

When poured into a joint, HYDRO–TITE immediately solidifies upon contact with the metal and bonds to both the surfaces of the bell and the spigot for the entire depth of the joint. It requires no caulking and after pouring a joint, water pressure may be immediately applied.

HYDRO-TITE is easy to use, no skill being required to make joints that are tight from the start. Joints made with HYDRO–TITE will stand any pressure the pipe will stand.

DRY BRAIDED FIBREX

USED LIKE BRAIDED JUTE
WILL NOT BREED BACTERIA

A SANITARY Packing used in jointing bell and spigot pipe for water, sewer mains and soil pipe.

FIBREX was designed for use with Hydro-Tite and other self-caulking compounds, but is entirely suitable also for joints made with lead, and for Sani-Tite and other asphalt sewer joint compounds. Thousands of pounds of Fibrex are already in service on water lines throughout the country.

HYDRAULIC DEVELOPMENT CORPORATION

Main Sales Office: 50 CHURCH STREET, NEW YORK, N. Y.

Works: WEST MEDFORD STATION, BOSTON, MASS.

(*Continued from page 46*)

supplies serving water to interstate carriers, and applying the new standards insofar as possible to all public supplies. The sampling schedule will possibly be different after July 1, 1943, with the minimum number of samples to be based on population. Five 10-ml. samples from the distribution system should be submitted. Local laboratory control for cities between 5000 and 10,000 population was advocated to facilitate examinations in the state laboratory.

"Maintenance of Wells" by N. E. Gunderson, Pres., Layne-Northern Co.: There are three principal causes for dwindling of water capacity in wells: (1) the ground water level itself may have lowered, (2) the condition of the well, and (3) the condition of the pumping unit. First steps in diagnosing the condition of a well would be a comparison of its present operation with the original operating conditions, which stresses the importance of obtaining and maintaining complete information on the pump from and including the time of installation. Several graphic examples of trouble caused by loss of records were given. Various methods of testing for the yield of a well were explained, and the ways of cleaning the well to obtain a greater yield were explained and demonstrated.

"The Indiana Water Table" by Charles E. Bechert, State Engr., Div. of Eng., State Dept. of Conservation: An appropriation of $15,000 annually for ten years was granted by the 1943 State Legislature for the purpose of conducting a water resources investigation in the state. This sum was enlarged more than $10,000 by donations from other state agencies or interested parties, and the federal government will match this total—$25,000—since the investigation will be done in co-operation with the United States Geological Survey. From data collected from observation wells in various parts of the state, it appears that the water table has fallen on an average of four to five feet which means that the water has been used at a rate greater than the normal recharge rate and that the underground storage has been tapped. In the Indianapolis area, industrial over-development has progressed so far that the yields of most wells, especially in the downtown area, have declined greatly. An accumulated deficiency in precipitation of about 45 in. for the period 1930–42 inclusive contributed to the decline. The department's program tentatively allows for an expenditure of $30,000 for stream flow investigations, $15,000 for ground water, and $5000 for the flow and levels of the natural lakes.

Dr. Wallace W. Hagan, Geologist, in charge of the Ground Water Sec. of the Conservation Dept., then gave a demonstration of the Gish-Rooney Electrical Earth Resistivity Instrument, which he has been using in determining potential water-bearing formations in areas where such information is needed for the development of a water supply. By measuring the resistivity of the underground formations to electrical currents, it is possible to determine water-bearing sands and gravels and predict the depth of such formations.

(*Continued on page 50*)

COMPLETE SELECTION in Socket Fittings!

Every type of socket fitting needed for water works construction and maintenance is included in Grinnell's line.

Special features of Grinnell Socket Fittings:

1. Improved design cuts size and weight and lessens friction losses.
2. All socket and spigot dimensions and wall thicknesses are the same as A.W.W.A. Standard Class "D" Pipe.
3. All fittings suitable for use with Super-deLavaud centrifugally cast Bell and Spigot Pipe.
4. Although listed for only 150 lbs. working pressure, suitable for 173 lbs. water pressure as specified for A.W.W.A. Class "D" Fittings.

Write for Catalog 1, "Water Works Specialties". Grinnell Co., Inc., Executive Offices, Providence, R. I. Branch warehouses in principal cities.

Sleeve (Solid)
Fig. 521

Plug
Fig. 523

Flanged Socket
Fig. 528

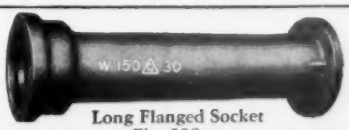
Cap
Fig. 524

Split Sleeve
Fig. 522

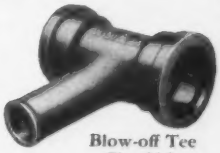
Tee
Fig. 511

Warren Coupling
Fig. 533

Reducer
Fig. 526


Long Flanged Socket
Fig. 529

Reducer
Fig. 525


Blow-off Tee
Fig. 515

Long ¼ Bend
Fig. 505

¼ Bend
Fig. 501

Tee
Fig. 514

Cross
Fig. 516

⅛ Bend
Fig. 507

GRINNELL

WHENEVER PIPING IS INVOLVED

(*Continued from page 48*)

"The Latest in Chlorination Trends" by A. E. Griffin, Tech. Dept., Wallace & Tiernan Co.: Development of new tests has been greatly accelerated since the entry of our country into the war. The trend in chlorination is away from chloramines (marginal chlorination) to real chlorine because of its greater bacterial killing power and its generally beneficial effect on taste and odor. Increased concern is presently in the minds of sanitarians regarding the chlorine content of delivered water. Several reports have been published of systems in which substantial residuals are maintained. Mr. Griffin remarked that some of the earliest work on the modern break-point technic had been done in Indiana, and here also the Laux, and the later Laux-Nickel texts, for free chlorine were developed.

"Laws Passed by the 1943 Legislature of Interest to the Water Works Profession" by Joseph L. Quinn Jr., Acting Director, Div. of Environmental San., Indiana State Board of Health: The Appropriation of $15,000 for an investigation of the water resources of the state has already been reviewed. Another bill passed was the re-establishment of a new stream pollution control board which can institute needed studies and take steps to abate pollution of streams in the state. The 1917 Sanitary District Act

(*Continued on page 52*)

IRONCRETE

IRONCRETE Meter Boxes consist of an oval iron top with a round lid having a Lifter Worm Lock, and a concrete body which you can cast yourself by means of a handy form. Durable, convenient, inexpensive.—made in two sizes. Write for catalog

FORD METER BOX CO.,
WABASH, IND.

EDSON
DIAPHRAGM PUMPS

Hand Operated--sizes 2", 2½", 3", 4"
Power Operated--sizes 3" and 4"

Open Discharge or Force Pump
Skid, Truck or Trailer Mounted

COMPLETE PUMP OUTFITS
Edson Pumps - Suction Hose
Brass Couplings - Bronze Clamps
Red Seal Diaphragms
Brass Strainer or Foot Valve
Hose Spanners - Adapters - Etc.

Also—Brass Hydrant Pumps

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SAFETOP Saving the Time-Fire Hydrant

Time-Saving on Response

. . . because the simple, straightline mechanism of the Kennedy Safetop functions smoothly no matter how seldom the hydrant may be operated, and the large unobstructed passageways throughout the hydrant reduce friction to a minimum.

Time-Saving on Repairs

. . . because, if broken by a smashing impact, the Kennedy Safetop can be returned to service within half an hour, by one man, with a few standard tools, without excavating, and at a total cost of less than $10 for repair parts and labor.

Time-Saving on Adjustments

. . . because no excavation is necessary to reach the operating parts, to change the nozzle positions, or to lengthen the hydrant for raise in street grade; and because the only required maintenance attention is a few minutes a year.

Write for bulletin describing this hydrant; termed by water department superintendents as "the most important advance ever made in fire hydrant design."

The Kennedy Valve Mfg. Co.
Elmira, N. Y.

KENNEDY
SAFETOP FIRE HYDRANT
REG. U.S. PAT. OFF.

(*Continued from page 50*)

provided the means whereby smaller areas could be incorporated within the boundaries of the sanitary district and obtain sewer service. Others included modernization of the Indiana Sanitary Schoolhouse law; also amendments to the Administrative Building Council Act. The bill for classification of water and sewage plants in the state failed to pass the House of Representatives.

"Cement Lining of Pipe in Place" by F. A. Schaefer, Supt., Public Service Co. of Indiana, New Albany: Methods used in lining pipe in place with cement as a means of controlling tuberculation were explained and illustrated with motion pictures showing the work in progress. The complete text of this paper will be found in this issue of the JOURNAL.

"Construction of Distribution System Records" by L. S. Finch, Prin. Asst. Engr., Indianapolis Water Co.: In wartime and also in time of peace, it is important that definite information regarding the location of valves, hydrants and main be readily available in form of maps and records. A standard procedure should be adopted as a means of insuring complete and up-to-date maps and records. Such practice was outlined and several samples of record cards and maps were illustrated.

(*Continued on page 54*)

★ ★ ★ ★ ★ ★ ★ ★

PRECISION CHLORINE CONTROL EQUIPMENT WITH HIGH VACUUM OPERATION FOR SAFETY ★

SterElatorS by Everson

● Everson SterElatorS operate under a high vacuum (equivalent to 2″ of mercury). Operate more efficiently and more safely because loss of vacuum from either water failure or gas line leakage automatically shuts off chlorine.

Easy to operate. Easy to install. All sizes with automatic, semi-automatic or manual controls.

Visible Rota-Meter permits a wider capacity range—10 to 1 is standard, 110 to 1 is obtainable.

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AMERICA'S MOST AMAZING PUMP

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Manufactured under R. Moineau's Patents, U. S. 1892217 and 2028407. Canadian Patents 352576. By exclusive license to Robbins & Myers, Inc.

...Unique chrome rotor literally squeezes water uphill.

FOR DEEP WELLS 4″ OR LARGER
500 TO 3500 GALLONS PER HOUR
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Also available turbine and propeller types in capacities up to 100,000 g.p.m.

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Equipment for WATER and SEWAGE Treatment Plants

Air Release Valves
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Flow Controllers for — Effluent, Raw Water, Wash Water, Chemicals, Sewage, Sludge
Indicating and Recording Gauges for — Rate of Flow, Loss of Head, Sand Expansion
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SIMPLEX VALVE & METER COMPANY
6784 UPLAND STREET • PHILADELPHIA, PENNA.

(*Continued from page 52*)

Commander J. S. Leister, USN Civil Engineering Force, Chicago, explained the formation of the "Sea Bees" (Construction Battalion) and told of their training and method of operation. His talk was high-lighted by examples of bravery and daring of the "can-do" boys in carrying out their establishment of bases for the Navy outside the continental United States.

"Conservation of Life and Property During Wartime" by Col. Richard Lieber, Chairman of the Natl. Conference on State Parks: Natural resources are, of course, static but in wartime, the need being greater, less care is taken to conserve them. The city is dependent on the resources of the country—water, minerals, farm products, etc.,—but will do little about their abuse. The importance of preventing pollution of streams was emphatically stressed.

"War Gases and Their Effect on Water Supplies" by R. J. Kryter, Vice-Pres., Esterline-Angus Co.: Tons of gas would have to be dropped on a water reservoir or other source of supply before there would be any possibility of pollution to a dangerous extent. Natural processes and purification procedure used in water plants would eliminate large quantities of the poison from the water. The task of bringing enough gas to Indiana to cause a high concentration in the water would be so tremendous that the possibility is remote. Water officials were urged to advertise the protection afforded by ordinary purification processes, to offset the prevalent apprehension of the public over such method of attack by the enemy.

A motion picture depicting the RAF on a bombing mission over Germany, "Target for Tonight," was also shown.

HERMAN HORSTMAN
Secretary-Treasurer

REPORT OF OHIO SECTION CONFERENCE

The Fifth Annual Conference on Water Works Management was held by the Ohio Section at Mansfield-Leland Hotel, Mansfield, on Monday, April 12, 1943. In tune with the times, the meeting was streamlined, reduced to one day's duration and held on Monday so as to reduce the time that those attending the conference would be absent from their organizations. A registration of 122 compared very favorably with previous Conferences.

In view of the fact that the National Conference will be held in Cleveland this year, the officers considered that the Section Conference should be planned to interest the water works men of the small cities and villages, leaving the problems of the larger cities to be discussed at Cleveland. With this in view, special invitations were mailed to the mayors and water

(*Continued on page 56*)

Looking ahead with Asbestos

You're looking at enough explosives

TO BLAST BERLIN FLAT

At a certain coastal point, there's a giant pier, where many ships dock at one time to load ammunition.

K&M "Century" Asbestos-Cement Pipe aids materially in this important war activity. It provides fresh drinking water and boiler feed water for these ships. It also serves to control the ever-present fire hazard as well.

The fresh water is brought in from a nearby reservoir via "Century" Pipe. An entirely independent "Century" line carries *salt water*, pumped directly from the bay, to strategically located outlets, for fire fighting purposes. The high resistance of this durable asbestos-cement pipe to internal and external corrosion, as well as to pier movements and vibration, make its use particularly suitable here.

For new water systems or extensions, K&M "Century" Pipe is economical, easily handled, and easy to install. Its smooth bore reduces friction and cuts pumping costs. Corrosion and tuberculation cannot alter its bore and reduce flow.

Despite the magnitude of K&M's war work, quantities of this fine pipe are available for Government-approved municipal needs. Today, at K&M, the war has inspired our research department to redouble its efforts, on new products and new ways to make them. The improvements that result are bound to lead to greater service in the "V" years to come.

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America's asbestos pioneer,
has made it serve mankind . . . since 1873

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Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains

K&M best in asbestos

(*Continued from page 54*)

works superintendents of all cities and villages with water supplies and within a reasonable traveling distance of Mansfield.

It is considered that this policy was justified inasmuch as 40 per cent of those registering were from small cities and villages.

The Conference opened at 10 A.M., with an extemporaneous talk by O. C. Kalbfleisch, Supt. from Mansfield. He described the improvements in the Mansfield water works which resulted in a reduction in operating costs of from $104 to $20 per mil.gal.

Plant expansion problems at Shelby were the subject of an extemporaneous talk by J. P. Adkins, Mgr. of Public Utilities. This talk dealt with the problems of iron in the water with the resulting incrustation of mains, main cleaning, water softening, elimination of dead ends, and the expansion of plant and distribution system to provide water for the Army Airport installation near Shelby.

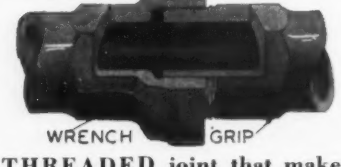
Ira M. Hoover delivered a paper on water works experience at Montpelier. He dealt with the problems of red water and described the campaign of the utility for a new plant. A description of the new plant, one of the better small ones, was given.

(*Continued on page 58*)

TIGHT Joints

This cross-section view shows the simple, strong, oversize (2½″)

OVERSIZE MALE & FEMALE THREADED JOINT



THREADED joint that makes McWane 2″ easy to lay. All you need is a wrench. All you do is "screw 'em together."

IMMEDIATE SHIPMENT!

McWANE CAST IRON PIPE CO.
BIRMINGHAM, ALA.

McWANE 2″ CAST IRON PIPE

Prevent Rusting

Rusta-Restor cathodic protection, provides *permanent protection* against rusting of water tanks, piping and steel structures of all kinds.

Initial cost of a complete equipment is about equal to the cost of a good paint job. . . . Operation costs only about 2 mills (i. e. $0.002) per year per square foot of surface protected.

If your tanks and steel structures are not now protected by this proven low-cost method, they should be. No obligation. Send for fully descriptive literature today.

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When Seconds Count!

A WORD ABOUT UNDERWRITERS' INSPECTIONS

The inspector stands in the fire station door, stop watch in hand. He gives the signal. The men above slide down the pole, leap on the truck, the engine roars, and the big red truck leaps into action! Ten seconds* from the first signal until the rear wheels cross the door sill! That is real efficiency for any crew. . . Why do these inspectors make such tests? To make an efficient fire fighting force that can swing into action quickly, thus reducing fire losses and insurance costs. . . But what good is such precision if the hydrant fails to function when the firemen reach the fire? There, seconds DO count! Time wasted trying to yank open a stubborn hydrant or untangle snarled nozzle cap chains makes fire losses mount. . . Be safe! Provide your city with the best — Mueller-Columbian hydrants. . . Here is a public servant that stands ready for duty any time day or night. The self-oiling mechanism in the bonnet positively prevents binding or rusting of the stem or working parts. The compression type main valve opens wide. No levers or mechanisms to prevent a full flow of water or to get out of order. Bronze-bushed double drain valves keep the barrel dry. Nothing can freeze in winter or rust at any time. Nozzle cap chain loops have a precise clearance. Nozzle caps come off without snarling chains. . . Back up your firemen with efficient hydrants. Specify MUELLER-COLUMBIAN.

MUELLER CO.

CHATTANOOGA, TENN.

* Official time of Station No. 6, Decatur, Illinois

(*Continued from page 56*)

The round-table discussion of problems of the small water works utility was started by D. P. Griffin of Mansfield, Dist. Engr. of the State Dept. of Health. Emphasis was placed upon the present activities of the Health Dept. through the district engineers in maintaining direct contacts with the small utility. Lack of materials and supplies now carried in stock by the small utility, with resulting improper operation and treatment, was stressed and corrective measures suggested. He urged the acquisition of adequate lands, surrounding the wells, under control of the utility for proper well protection.

Purification problems were discussed by James E. Specht, Supt. of Orrville Municipal Utilities; C. P. Hoover, Supt. of Purification, Columbus; H. M. Allen, Supt. of Water, Swanton; C. R. Crawford, Supt. of Water, Plymouth; and J. S. Gettrust, Supt. of Purification and Pumping, Akron.

Personnel problems of utilities and of the State Dept. of Health were discussed by T. R. Lathrop, San. Engr., Ohio Dept. of Health.

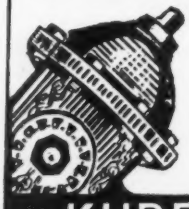
After a well-attended and excellent luncheon, Hon. William J. Locke, Mayor of Mansfield, welcomed the group and extended an invitation to

(*Continued on page 60*)

No Duration for

FIRE PROTECTION

Times like these test the mettle of men and machines. Kupferle Fire Hydrants installed as long as fifty years ago are in service today. Replacements for all Kupferle Hydrants are available. No Kupferle Hydrant will ever be an orphan.



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HIGH QUALITY VALVES HYDRANTS

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34. Address M & H Valve and Fittings Company, Anniston, Alabama.

FOR OVER 50 YEARS

Sincerely yours *

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ON THOUSANDS OF BUILDERS FLOW METERS AND CONTROLLERS

50 YEARS' EXPERIENCE
in the Design and Manufacture of
Water and Sewage Works Equipment
AT YOUR SERVICE
for
POST WAR PLANNING

VENTURI METERS
TYPE M, FLOW WATCH AND CHRONOFLO METERS
VENTURI CONTROLLERS · FILTER GAUGES
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CHRONOFLO TELEMETERS & CONTROLLERS
TOLEDO CHRONOFLO CONVEYOR WEIGH METERS
Correspondence Invited

* Back in the old days, second-rate Roman sculptors who made unsightly nicks in the marble would secretly patch up the flaws with a mixture of wax and marble dust. These patches would drop out later on and honest artists suffered so much that they began labelling their handiwork "Sine Cera" (i.e. "Without Wax"); from this we derive our word "sincere" meaning honest, genuine, real.

ARMY E NAVY
AWARDED
AUG. 1st 1942

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BUILDERS
RECORDING-INDICATING-CONTROLLING
Instruments

(*Continued from page 58*)

return after the War for another meeting. W. W. Morehouse, A.W.W.A. Director of the Ohio Section, responded to Mayor Locke's address of welcome.

William W. Brush, Treas. of the A.W.W.A., urged the continuance of Section Meetings as they fill a great need in coping with problems created by the war.

A report on the latest developments in the war manpower problems affecting water works personnel was presented by Harry E. Jordan, Secy. of the A.W.W.A.

Committee reports indicated that the Ohio Section is actively engaged in supporting House Bill 329 to create a lien on property for water bills in Ohio.

Officers of the Section elected for the ensuing year are: Harvey P. Jones, Toledo, Chairman; Carl A. Eberling, Cincinnati, Vice-Chairman; Lt. Paul Cook, Hon. Trustee; Hayes Kuhns, Killbuck, Trustee—term expiring 1945; Ira Hoover, Montpelier, Trustee—term expiring 1946; L. J. Hoffman, Akron, Secy-Treas.

Charles P. Hoover of Columbus was named to receive the Fuller Award for the Ohio Section.

Following the business session, Office of War Utilities Order U-1 was discussed by H. Lloyd Nelson, Princ. Engr. of the WPB Office of War Utilities, Washington, D.C. A question and answer period, which brought forth many troublesome questions and much valuable information, followed.

The Section is enjoying a healthy growth in membership, having increased from 88 when organized in 1938 to a present membership of 205. The 200 mark was passed at the Conference when many new membership applications were obtained. The Section's policy of attempting to help the small utility with its problems appears justified inasmuch as membership in the Section representing small water works is showing a very healthy growth.

L. J. HOFFMAN
Secretary-Treasurer

OCD has issued a 16-page pamphlet describing and picturing enemy fire bombs, with categorical instructions for extinguishing them. The use of a *jet of water* is stressed, OCD having concluded that sand or a *spray* of water, as recommended formerly, is dangerous and ineffective.

"The vital importance of a stored supply of water in the home cannot be overemphasized," asserts OCD. The pamphlet recommends that at

(*Continued on page 62*)

SAVE FOR VICTORY

EVERYWHERE Americans are being asked to "SAVE FOR VICTORY." Water works superintendents, engineers and public officials can do more in this connection by investigating the National Method of water main cleaning. This method restores the carrying capacity of pipe to at least 95 per cent of that of new mains, thereby eliminating the necessity for purchase of new mains. Aside from this the National Method makes possible lower pumping costs, greater delivery, reduced insurance rates and clean water.

Now is the time to do your part—SAVE FOR VICTORY

National Water Main Cleaning Co.

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what WE READ in WATER

WE have helped many hospitals and medical centers and other public institutions throughout the nation to remove scale and corrosion in their heating plants. Haering Glucosates increased the efficiency of these heating systems and protected the pipes from further corrosion.

Haering Water Treatment saves equipment and decreases maintenance expense in refrigerating plants, cooling systems, power plants and domestic water systems. It is the safe and economical way of correcting scale and corrosion.

Write for "Water Studies"

D. W. HAERING & CO., INC.

GENERAL OFFICES: 205 West Wacker Drive
CHICAGO, ILLINOIS

(*Continued from page 60*)

least 10 gal. of water be kept on hand at all times, placed where it can be reached easily. "Special 'bomb extinguishing' powders, and special devices such as scoops, grabs, and snuffers are," according to OCD, "entirely without merit and may endanger the lives of those who depend on such devices for protection."

The pamphlet, entitled "Enemy Fire Bombs," is intended for the exclusive use of Civilian Defense personnel.

Metal strapping on containers or bundles was limited recently to certain kinds of commercial uses by WPB. The purpose of the order is to conserve metals by eliminating the use of metal strapping in light weight shipments, except where necessary for safe transport. Complete details are to be found in Conservation Order M–261, issued by the Director General for Operations.

"Operator Licensing in Kentucky" is an article in "Chats With Water Works Folks" for April 1943, put out by R. Paul Farrell, Secy.-Treas. of Kentucky-Tennessee Section. The complete review follows:

"According to R. R. Harris, Kentucky State Health laws were revised in 1918, and the Board was empowered to set up standards of qualifications and issue certificates to operators of water and sewage plants. The law is not mandatory and no action was taken to draw up rules and regulations until 1936. During 1937 a licensing committee, composed of the State Sanitary Engineer and five water works operators selected from various sections of the State, was appointed. This Committee formulated plans for licensing on a voluntary basis.

"The program of licensing water plant operators actually got under way in 1940 when the State Dept. of Health, in co-operation with the Univ. of Kentucky and the Univ. of Louisville began to hold annual schools of instruction for water plant operators. Members of the licensing committee served without remuneration, gave freely of their time, and were of material aid in making the schools a success. Schools were at the Univ. of Kentucky, Lexington, Ky., and the Univ. of Louisville, Louisville, Ky., in 1940 with an attendance of 35 and 29 respectively and in 1941 with an attendance of 34 and 26. Due to the national emergency, it

(*Continued on page 64*)

COOK Well Strainers

A reciprocal relation, the life and functioning of the one depending much on the other.

A. D. COOK, INC.

Lawrenceburg - Indiana

COOK Deep-Well Turbine Pumps

Serving the UNITED NATIONS and YOU

It is Activated Alum's privilege to be the favorite filter alum in many cities, from whom many active defense industries secure their water supplies.

Activated Alum and Blackalum are also favorite water treatment chemicals in many army posts—either securing their water supply from cities where Activated Alum or Blackalum is used or in their own water treatment plants.

We are proud to be a part of the water purification system of this nation and assure you that *service*, *quality* and *research* are your assurance of filter alums you can be proud to use in your plant.

ACTIVATED ALUM
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516 NO. CHARLES STREET
BALTIMORE, MARYLAND

(*Continued from page 62*)

was deemed advisable to hold only one school in 1942. This was held at the Univ. of Kentucky and the attendance was 37. The total attendance at these schools has been 160. This does not mean that 160 different persons attended as a number of the men have come back year after year to improve their knowledge in the field of water plant operation.

"Following each school, an examination was held to determine which operators were qualified to receive a license. This examination was not limited to the men who attended the school but was open to anyone in the State operating a water plant who could meet the minimum requirements. Records show that 108 men have taken the examination and out of this number 88 have passed the examination with satisfactory grades. To date 81 men in water plants throughout the State hold a license; four additional men have passed the examination and have been notified that they are eligible for a license but have not made application for a license and three others have passed the examination satisfactorily but cannot be issued a license as they are not regularly employed in the operation of a water plant.

"In concluding, Harris states there is no doubt but what the licensing of water plant operators has materially improved the operation of plants in the State and has aided in protecting the positions of men who are doing a satisfactory job. Public water supplies in Kentucky total 259 of which 68 receive no treatment and 40 chlorination and/or aeration, leaving 151 with purification, iron removal and softening equipment requiring well trained supervision. To date, of the 81 operators licensed, approximately 14 have been lost to the armed forces and other fields of service. It is therefore apparent that considerable improvement can be made by a compulsory water plant operator's licensing law."

The Johnston and Jennings Co., Cleveland, has purchased the exclusive manufacturing and sales rights of Rusta-Restor—a cathodic (i.e. electrical) process for preventing rusting of water tanks, piping and similar steel structures. Johnson and Jennings also makes Oceco tank fittings and Stowe electrical stokers.

Proceedings of the Third Annual Water Conference of the Engineers Society of Western Pennsylvania are now available for distribution at $3.00 per copy, plus postage, by writing to the Society at the William Penn Hotel, Pittsburgh, Pa. The subjects covered at the Conference were: Use of Inhibitors for Aluminum Chemical Equipment; Recent Developments in Underwater Paints and Coatings; Solubility of Salts in Steam at High Pressures; Protection Against Caustic Embrittlement by Coordinated Phosphate pH Control; Slime Control in Cooling Equipment with Phenol Derivatives; Effect of Water Conditions on Condensers, Pumps and Heat Exchangers; Use and Application of The Dorrco Hydro-Treator; Water Treating Equipment for War Industries; and Some Applications of the Organic Ion Exchangers.

Application for Membership
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Date:.....

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(Active, Junior, Corporate or Associate Membership, or Affiliate)

in the American Water Works Association, and enclose herewith the sum of $....., one year's dues in advance.

Name.....

Title or Position.....

Company or Department.....

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If application is for Junior Membership, give date of birth.....

If application is for Affiliate, state number of active services in property where employed.....

Nature of business or character of work (for office records).....

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If application is for Corporate or Associate Membership, it must be signed by the person designated to represent the firm or corporation in A.W.W.A. activities.

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Signature of Applicant.

Application obtained by

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(OVER)

ARTICLE I OF BY-LAWS

Section 3. An Active Member shall be a superintendent, a manager, an official or employee of a municipal or private water works; a civil, mechanical, hydraulic, or sanitary engineer, a chemist, a bacteriologist, or any qualified person engaged or interested in the advancement of knowledge relating to water supplies. (Annual Dues, $10.00.)

Section 4. A Corporate Member shall be a Water Board, Water Commission, Water Department, Water Company or Corporation, National, State or District Board of Health, or other body, corporation or organization engaged or interested in water supply work, and shall be entitled to one representative whose name shall appear on the roll of members, and who shall have all the rights and privileges of an Active Member. This representative may be changed at the convenience and pleasure of the Corporate Member on written notice to the Secretary. (Annual Dues, $15.00.)

Section 5. An Associate Member shall be either a person, firm or corporation engaged in manufacturing or furnishing supplies for the operation, construction, or maintenance of water works. (Annual Dues, $25.00.)

Section 6. A Junior Member shall be an employee of a municipal or private water works; a civil, mechanical, hydraulic, or sanitary engineer, a chemist, a bacteriologist, a student or any otherwise qualified person engaged or interested in the advancement of knowledge relating to water supplies. At the time of his admission he shall be not less than eighteen years of age. His connection with the Association shall cease when he becomes twenty-five years of age, unless he is regularly enrolled as a student in a university or has previously transferred to the grade of Active Member. Junior Members shall receive the JOURNAL and all privileges of Active membership except holding office and voting. (Annual Dues, $5.00.)

Section 7. An Affiliate shall be any person otherwise qualified for Active membership who, at the time of application, is not nor previously has been a member of the Association and who, for acceptable reasons, does not wish to become an Active Member.

No corporation, firm or partnership which otherwise would be entitled to the grades of Associate or Corporate member may hold the grade of Affiliate. No employee of an Associate member may become an Affiliate. No person who is the superintendent, the manager, the chief engineer, the superintendent of filtration, the chief chemist, or the superintendent of distribution in a plant having more than 3,000 active services, is eligible for the grade of Affiliate. Under unusual conditions, exception to the above may be made by action of the Executive Committee if the applicant sets forth fully the reasons for the exception when applying for the Affiliate grade.

Affiliates shall not be entitled to vote upon general Association questions, and not eligible to hold office in the Association, nor in any of its Divisions. They shall be eligible to vote upon Section questions and to hold Section offices except those of Chairman, Vice-Chairman, Secretary (and/or Treasurer). They shall be entitled to all other rights and privileges of Active Members. Affiliates receive the March, June, September and December issues of the JOURNAL each year. (Annual Dues, $4.00.)

Memberships will be dated as of the beginning of the calendar quarter in which the application is received.

Membership in the Association carries, also with no additional dues, membership in its Local Sections and National Divisions, and includes the JOURNAL, a monthly publication devoted to water works interest. The proceedings of the annual conventions and of the meetings of the Local Sections are published in the JOURNAL, which also contains contributed articles on subjects pertaining to public water supplies and 250 pages annually abstracted from the world's water works literature.

NEWS OF THE FIELD

After a twenty-two year interval, the A.W.W.A. returned to Cleveland, Ohio, to hold its sixty-third annual meeting. This was a "Conference on War-Winning Water Works Operation," and there was no doubt in the minds of those who were there that it was a conference and that it had as its objective—the winning and ending of the war.

The weather man did his part to make things warlike by turning on a combination of heat and thunderstorms that made meeting rooms uncomfortable and tempers brittle. But water works men showed their mettle by an unusually high, instead of a lessened percentage of attendance at the technical sessions.

An analysis of recent conventions is interesting:

Registration

	1939	*1940*	*1941*	*1942*	*1943*
Active Water Works Men	714	906	779	761	606
Manufacturers Representatives	319	369	371	463	397
Ladies	257	192	295	214	128
Total Registered	1290	1467	1445	1438	1131

Attendance at Sessions

Maximum at Any Session	251	388	300	500	549
Percentage of Active Registrants Attending Maximum Meeting	35	43	39	66	91

The striking increase in percentage attendance during the two war years is clear evidence that conferences such as the A.W.W.A. has been holding are serious matters, to which the men present give their earnest attention.

It will not do to leave the wrong impression concerning attendance at technical sessions during earlier conventions. It must always be remembered that an A.W.W.A. convention, or conference, is formally a "two ring" event and one of those rings—the technical sessions—divides again into two and sometimes three simultaneous activities. The two main "rings" are the technical sessions and the exhibits. They mutually serve each other and men spend part of their time in one and part in the other. Again, members move in and out of meetings—in to hear one paper, and out to look at an exhibit; or, in a General Session, to hear one paper and then into the concurrent Water Purification Division, or some other session, to hear another paper.

So the above percentage figures on maximum momentary attendance must not be taken as an absolute measure of interest in the meetings, but simply for what they reasonably appear to be—evidence that the men who go to A.W.W.A. Conferences in these war years are more interested in the technical sessions than they were during the pre-war years.

(*Continued on page 2*)

(*Continued from page 1*)

The speakers and their addresses were of unusually high quality. Witness: Chevalier and Wolman on postwar planning; Krug and Gorman on the wartime materials situation; Howson and Frye on the tank racket; Weir and Dawson on new materials for water works use; DeBerard and Howson on concrete pipe; Irwin, Alfke, Van Dusen and others on labor relations; the steel pipe session; the superintendents' prize papers; the discussions on fluorides, on the new drinking water standard, on commission controlled water works, on fair rate comparisons. The innovations in the form of a series of public relations motion pictures and the radio play drew a large audience. Mr. Arthur Collins, our British visitor, gave a thrilling and moving story of the English countryside at war.

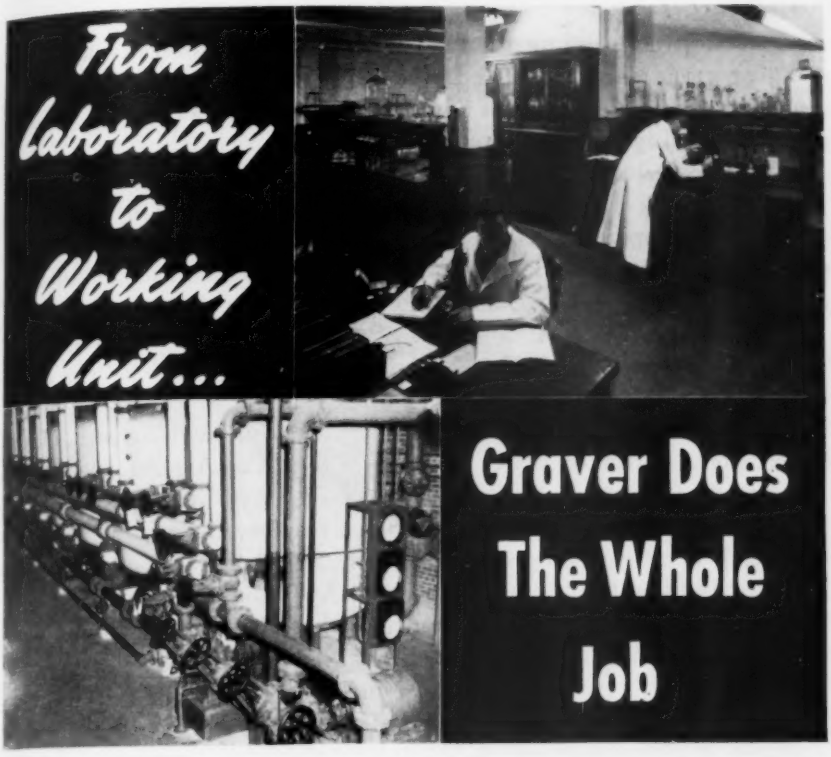
No, there is nothing to regret in holding such a conference. It is a tremendous stimulant to the spirit of the men who attend and gives them material upon which they build better service to their customers. Thus plans will move toward a conference in 1944 in *Milwaukee*. Not since 1909 has the A.W.W.A. met in this fine middle western city. It has a group of loyal members, who are a part of one of our finest Sections. There will be available a roomy comfortable auditorium where there is plenty of space for meetings, exhibits, conversation and business. All of this depends upon the development of satisfactory arrangements with the hotels, etc., and more broadly, upon the progress of the war and the conditions of transportation in the first half of 1944.

The Nicholas S. Hill Jr. Cup, awarded each year to the section with the greatest percentage gain in membership, went to the North Carolina Section which had a net growth of 51 members, to give it a point score of 70.89—far ahead of its nearest competitor. The Southwest Section, in second place, gained 82 members, for a score of 46.33; and the Indiana Section was third, gaining 36 members and having a score of 35.32. This year, as in 1942, scores were computed on the new quota system based on urban population and the membership of each section. This system was devised to equalize the opportunity of all sections to compete for the cup, giving the large ones credit for their present high membership totals.

The Henshaw Cup, which goes each year to that section having the greatest percentage of its members in attendance at its section meeting, went to the Minnesota Section (73.33 per cent). Second was the Montana Section (67.39 per cent) and third was the Pacific Northwest Section (64.88 per cent).

Earl Devendorf, Asst. Director, Div. of Sanitation, N.Y. State Health Dept., and New York State Water Co-ordinator, was awarded the John M. Diven Memorial Award for the exceptional leadership which he has given the mutual aid activities in New York State. It was felt that this type of activity was generally the greatest contribution in many ways in the past year and that the award to such a leader was symbolic of the

(*Continued on page 4*)



All Graver Water Conditioning Equipment is completely Graver-built from start to finish. There is no "jobbing out" of work. No sub-contractors enter into the picture. The service is complete and the responsibility is undivided.

- Your raw water supply is given a thorough study and analysis in Graver laboratories.
- The proper equipment to meet your specific requirements is designed by Graver engineers alone or in cooperation with your engineers.
- The equipment is built in Graver plants by Graver workmen under the supervision of Graver engineers.
- And the installation is made under Graver supervision or by your contractor with such help from Graver engineers as he may desire.

That's what we mean by complete service and undivided responsibility.

If you are planning to invest in water conditioning equipment of any type, bear these facts in mind—and consult Graver. We'll gladly discuss your problems with you and submit quotations without obligation.

GRAVER TANK & MFG. CO., INC.

4809–45 Tod Ave.
East Chicago, Ind.
New York Catasauqua, Pa. Chicago Tulsa

GRAVER *Water Conditioning Equipment*

(*Continued from page 2*)

recognition given many men throughout the country. Bulletins and parts of the program drawn up under Devendorf's leadership served as guides in some instances for other states and in many instances portions of his program appeared in modified form in other programs.

Wilfred F. Langelier and Harvey F. Ludwig were awarded jointly the John M. Goodell Prize which goes each year to the author or authors of the JOURNAL paper deemed most valuable during the past year. Their paper, "Graphical Methods for Indicating the Mineral Character of Natural Waters," was published in the March 1942 JOURNAL.

Honorary A.W.W.A. Membership was awarded to the following: George C. Bunker, Cons. Engr., Caracas, Venezuela; Edward S. Cole, Pres., Pitometer Co., Cons. Engrs., New York; William R. Conard, Engr. & Consultant, Burlington, N.J.; and William H. Hurlbut, Asst. Ch. Engr. & Gen. Mgr., Bureau of Water Works & Supply, Los Angeles.

Recipients of the Fuller Memorial Awards listed by Sections were as follows: California, Carl M. Hoskinson; Canadian, Norman J. Howard; Florida, J. R. Hoy; Four States, Seth M. Van Loan; Illinois, Louis R. Howson; Indiana, Cecil K. Calvert; Kentucky-Tennessee, C. M. McCord; Michigan, Edward D. Rich; Minnesota, Arthur F. Mellen; Missouri Valley, W. Victor Weir; New Jersey, S. F. Newkirk Jr.; New York, Earl Devendorf; North Carolina, W. M. Franklin; Ohio, C. P. Hoover; Pacific Northwest, Charles C. Casad; Rocky Mountain, D. P. Porter and L. O. Williams Jr.; Southeastern, B. P. Rice; Southwest, Egmont S. Smith; Virginia, Eugene F. Dugger; Western Pennsylvania, Myron G. Mansfield; West Virginia, Mentor Hetzer; Wisconsin, William U. Gallaher.

Samuel B. Morris is the new President of the A.W.W.A. His record of Association activities is a long one. He became a member in 1920 and by 1923 was serving as Secy.-Treas. of the California Section, a position he held until 1925. He was Vice-Chairman of the California Section in 1926 and Chairman in 1927, and was A.W.W.A. Director from California in 1931–33. He received the John M. Diven Memorial Award in 1933. He has served on such A.W.W.A. committees as the following: National Water Policy, Publication, and Water Works Terms. For the past year he has been Vice-Pres.

Born in Los Angeles in 1890, he received his early technical education at Throop Polytechnic Inst. from 1903–07, then studied at Stanford Univ. which awarded him the degrees of A.B. and C.E. in 1911. He began his engineering work as Asst. Engr. with the North Pasadena Land & Water Co. A year later he became Asst. Engr. with the Pasadena Water Dept. and in 1913 he was made Ch. Engr., a position which he held for 22 years. During this time he designed and built the 328 ft. high dam which was dedicated "Morris Dam" in 1934.

(*Continued on page 6*)

This is a *GATE VALVE* which will be buried under a city street

Nothing unusual about that—large numbers of valves go under-ground every year. The noteworthy thing about *this* particular valve is the fact that thousands of its brothers are still giving excellent service after *over half-a-century* and probably will continue to do so for another 50 years.

That is worth considering. What better *guarantee* would you require on the valves you buy *today*?

RENSSELAER VALVE COMPANY

TROY, N. Y.

BRANCH OFFICES

ATLANTA, GA.
Rhodes-Haverty Building

CHICAGO, ILL.
Monadnock Building

DALLAS, TEXAS
Allen Building

HAVERHILL, MASS.
Coombs Building

LOS ANGELES, CAL.
Subway Terminal Building

PITTSBURGH, PA.
Oliver Building

SAN FRANCISCO, CAL.
Sharon Building

SEATTLE, WASH.
1252 First Avenue, South

(*Continued from page 4*)

With 25 years behind him as an experienced water works operator, designer and builder, he became a professor when in September 1935 he assumed the duties of Prof. of Civil Eng. and Exec. Head of the Civil Eng. Dept. of Stanford Univ. A year later he was made Dean of Stanford's School of Engineering.

He has long been active as a consultant, having served as Consultant to the City of Pasadena since 1935, as Water Consultant to the National Resources Planning Board in 1936–37, as Consulting Eng. for the Bonneville Power Adm. since 1941 and for the War Dept. in 1942.

Samuel F. Newkirk Jr. has been elected Vice-Pres. of the A.W.W.A. for 1943–44. He has been an Active Member of the A.W.W.A. since 1927. He served as Chairman of the New Jersey Section in 1936 and was A.W.W.A. Director from New Jersey in 1939–41. He is currently serving on the A.W.W.A. Committee on Municipal Water Works Organization and is Chairman of the A.W.W.A. Committee on Meters which issued "Tentative Specifications for Cold Water Meters—Displace-

(*Continued on page 8*)

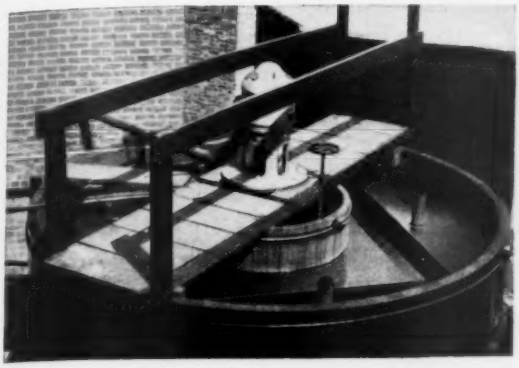
Frank C. Jordan, Secy. of the Indianapolis Water Co., died suddenly on June 26. Although he had not been in the best of health in recent years, he had spared himself of few of the duties to which he was accustomed, and they were many. He had attended a forum and dinner meeting the evening before his death.

He began work with the Indianapolis Water Co. in 1894 as office boy. Successively he became clerk, bookkeeper, purchasing agent. He was made Secy. in 1909 and Asst. Treas. in 1913.

Professional and community organizational affairs always received unstinted support from him. He was the first Secy. of the Indiana Sanitary and Water Assn. when it was formed in 1908 and in 1912 he served as Pres. of the Assn. which was the forerunner of the A.W.W.A. Indiana Section. He was a constant force in the going organization of the Indiana Section and of the A.W.W.A. He was a Trustee in 1920–22, Vice-Pres. in 1924, Pres. in 1925, a member of the Exec. Com. in 1926–27, received the Fuller Memorial Award in 1940, and was made an Honorary Member of the A.W.W.A. in 1941.

Fire prevention was an absorbing interest with him for many years. He first served as Chairman of the Fire Prevention Committee of the Indianapolis Chamber of Commerce in 1920. He was elected Pres. of the National Fire Protection Assn. in 1929. He was also very active in church affairs, the Y.M.C.A. and the Boy's Club Assn.

AMERICAN FLOCSETTLERS



WATER CONDITIONING

This combination unit is effectively applied when it is desirable to use a blanket contact tank.

POSITIVE SLURRY RECIRCULATION:

Visible slurry return allows complete control of the volume of slurry returned.

SLURRY BLANKET CONTROL:

The depth and density of the slurry blanket is adjustable by varying the amount of recirculated slurry.

WASTE SLURRY CONTROL:

The positive flow through the slurry concentration chamber automatically and continuously maintains the slurry blanket at the highest permissible level.

SEND FOR BULLETIN NO. 256

(*Continued from page 6*)

ment Type," approved by the A.W.W.A. Board of Directors in November 1941 and published in the December 1941 JOURNAL. In 1942 he received the John M. Diven Memorial Medal for his work as Chairman of the Meter Committee. He received the Fuller Memorial Award for the New Jersey Section at the Conference in Cleveland this year.

Born at Sandy Lake, Pa., in 1890, he obtained technical education at Sandy Lake Inst. before attending Pennsylvania State College from which he received the degrees of B.S. and C.E. During a 10-yr. period after 1911, he had numerous engineering engagements, including: Pennsylvania Highway Dept. work; Asst. Town Engr., Montclair, N.J.; Office Engr., Bloomfield, N.J.; Asst. Engr. for Air Nitrates Corp. at Muscle Shoals, Ala.; Asst. Engr. with the consulting firm of Hill & Ferguson in New York; and Asst. Engr. for the Pitometer Co.

From 1921 until 1927 he was Engr. for the National Board of Fire Underwriters with headquarters at New York. In 1927 he became Supt. and Engr. for the Elizabethtown Water Co. which was serving Elizabeth, N.J. When the city acquired the plant in 1931 he was appointed Engr. and Supt. by the Elizabeth Board of Water Comrs.

(*Continued on page 10*)

Vogt Fire Hydrants

Standard—
"Traffic Model"—
Flush Type—
Water Crane—
Type

Vogt Gate Valves

Non-Rising Stem—Outside Screw and Yoke—Hub End —Flanged End—Ends to Fit any Type Pipe.

Also—Floor Stands, Shear Gates — Tapping Sleeves and Valves, Flap Valves and Mud Valves.

Vogt Brothers Mfg. Co.
INCORPORATED
MAIN AT 14th ST.
LOUISVILLE KENTUCKY

PIPE ACCORDING TO THE A. S. A. LAW OF DESIGN

Mono-Cast Centrifugal Pipe can be manufactured in specific weights for specific laying conditions, and in accordance with the recently adopted A. S. A. Law of Design. You get the *exact* pipe your conditions call for.

PROMPT DELIVERIES with suitable priorities

AMERICAN CAST IRON PIPE COMPANY
BIRMINGHAM 2, ALABAMA
Sales Offices in Principal Cities

ASARCO Type K Tube-Loy and SUPERSEAL Flared Fittings for Main to Meter Water Service

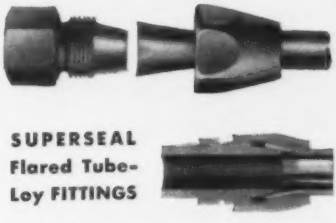
Have you been stymied getting materials for Main to Meter Water Service?

Here's your answer . . . ASARCO Type K Tube-Loy and SUPERSEAL Flared Tube-Loy Fittings. This combination, made of less critical materials, offers the advantages of easy handling for fast installation, long life, leak-proof connections and trouble-free service PLUS *availability right now.*

For complete information and descriptive catalog on SUPERSEAL Flared Tube-Loy Fittings and ASARCO Type K Tube-Loy, call your nearby GRINNELL BRANCH or write Grinnell Company, Inc., Executive Offices, Providence, R. I.

GRINNELL

WHENEVER **PIPING** IS INVOLVED



SUPERSEAL Flared Tube-Loy FITTINGS

- ★ Made of malleable iron, electro galvanized.
- ★ Long, 10° tapered cone provides greater seating area for tubing flare . . . forms a leak-proof joint unaffected by vibration.
- ★ Three types available – tube to inside iron pipe thread . . . tube to outside iron pipe thread . . . tube to tube.
- ★ Specially designed for use with

ASARCO Type K TUBE-LOY

- ★ Tubing extruded from a lead alloy . . . has all of lead's unexcelled resistance to corrosion.
- ★ Installation is much easier than with other available materials.
- ★ Nominal sizes – ½", ¾", 1".

(*Continued from page 8*)

"What Happened to Fletcher's Castoria" was the caption under which the manufacturer carried, about June 23, a display advertisement in many of the larger circulation newspapers over the United States. In part the copy read as follows:

"Q. What caused the trouble?

"A. The sugar content of Fletcher's Castoria was reduced to conserve sugar under wartime conditions. A year ago Castoria was made with this reduced sugar content and was up to standard in every respect. This year, in March, we again started production with reduced sugar. However, at that time a chemical change—harmless in itself—occurred in the characteristics of the water used in making Castoria. But this change, in COMBINATION with the reduced sugar, increased the degree and rate of normal fermentation. The more rapid fermentation retarded normal re-oxidation during the aging process, resulting in a product which caused nausea."

The reference to *water* lead the A.W.W.A. to inquire of the manufacturers just what the conditions in the water were that led to the trouble —and particularly—was a public water supply involved? As of July 1, no information has been received from the manufacturer.

It has, however, been learned through other channels, that the public water supply in the city where the plant is located was, *after distillation*, used in making Castoria. Thus we can be reasonably satisfied that the abnormal conditions which resulted in the manufacture of the unsatisfactory product, were within the control of the manufacturer and not due to a failure or abnormality of the public water supply. As soon as adequate information is obtained; it will be summarized in this JOURNAL.

Lt. Emmanuel H. Pearl, who was cited in the June JOURNAL as serving in the Sanitary Corps, was originally commissioned and is still serving in the Corps of Engineers. His transfer was an editorial error.

(*Continued on page 12*)

Deferments for Sanitary Engineering Personnel

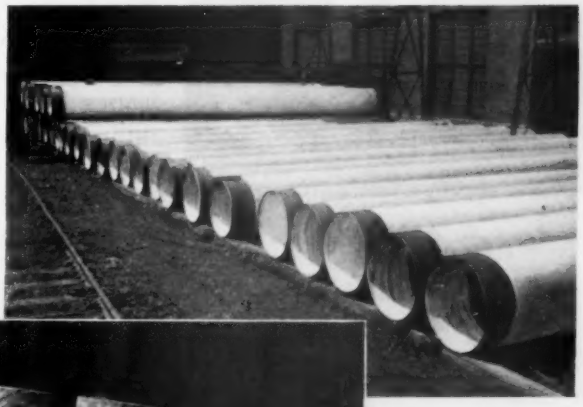
Reference is made to the information circular sent to all members of the A.W.W.A. under date of June 4, 1943. This contained a schedule of "Information to be submitted" by water departments wishing to obtain deferments for key sanitary engineering personnel. Such information should be filed with:

Capt. C. W. Klassen, Procurement and Assignment Services, War Manpower Commission, 1006 U Street, Washington, D.C.

ALCO

ELECTRIC WELDED STEEL PIPE

PLAIN LENGTHS OR SPECIALS



36" O. D. Piping Ready for Loading.

Special 60" O. D. Header.

Alco Electric Welded
Steel Pipe Insures Against
Leakage and Breakage

AMERICAN LOCOMOTIVE COMPANY

ALCO PRODUCTS DIVISION

30 CHURCH ST., NEW YORK, N. Y. DUNKIRK, N. Y.

(*Continued from page 10*)

C. A. McGinnis

C. A. McGinnis, Mgr., Transite Pipe Div. of Johns-Manville Sales Corp., is the new A.W.W.A. Director representing the Water and Sewage Works Mfrs. Assn. He is also Pres. of that Assn. and is now a member of the A.W.W.A. Convention Place Committee. He was born in Baltimore, where he resided until 12 years ago, when he came to the Johns-Manville headquarters at New York. Previously he had been engaged in the design and construction of seaport piers and warehouses, bridges and heavy manufacturing facilities. He is participating in the active postwar planning, being a representative on the Committee of Technical Societies.

Edward J. Cleary, Man. Editor, *Engineering News-Record,* is now on an extended trip to certain South American and Carribean countries, where he will inspect sanitation and engineering activities. His work is in the nature of special consultant on the development of projects and conservation of critical materials. He is in official governmental employment which is a part of the over-all activities of the Inter-American Affairs Committee.

Leonard P. Wood, a Senior Civil Eng. with the Board of Water Supply of the City of New York, has retired after 37 years' service. He was on construction with Mass. Metropolitan Water Board and on design with the Charles River Basin Commission of Boston before he entered the service of the Board of Water Supply in 1906 in the Designing Div. on the day that division was organized. He served successively as Asst. Engr., Asst. Designing Eng., Designing Engr., on the personal staff of the Dept. Engr., Headquarters Dept., and on the personal staff of the Chief Engr.

During the World War, he was first Capt. then Maj. of Engineers, A. E. F., in France.

He will live in White Plains, New York.

Orla E. McGuire is leaving the Bureau of Engineering, Michigan Dept. of Health, Lansing, to take up a commission as Capt. in the Army

(*Continued on page 14*)

When the Bell Rings . . .

Plant superintendents, council members, city commissioners, and other officials, all are talking about war and its many urgent problems . . . and just as earnestly these same men are thinking of the urgent problems they will face after the war.

We sincerely believe that much of your post-war planning can and should be started now, when you and your consulting engineers have the opportunity to analyze your over-all program and prepare a plan of action which is commensurate with your future needs. Then, when the bell rings and you've torn up the last set of priority papers, you will be ready—engineered for immediate progress.

Simplex Valve & Meter Company has been collaborating in such long-time planning for over forty years. Our outlook, therefore, is based on sound experience. We know many of the problems involved and can offer the solution to most of them. We are prepared to help you plan for the future—starting today.

SIMPLEX VALVE & METER COMPANY
6784 UPLAND STREET, PHILADELPHIA, PENNA.

(*Continued from page 12*)

Sanitary Corps. McGuire had served there 13 years before acting as Designing Engr. at the U. S. Marine Air Base, Cherry Point, N.C. and at the Sanitary Div. of the Green River Ordnance Plant, Dixon, Ill. He returned to his Michigan post a short time ago.

P. R. Greenman, formerly associated with Foster-Wheeler, at Chicago and Cincinnati, has joined the Ludlow Valve Mfg. Co. as industrial sales engineer in the Chicago territory. Mr. Greenman has been a mechanical engineer and designer for many years.

W. H. Weir, former Assoc. Director of San. Eng. in the Georgia State Dept. of Health, has been advanced to the rank of Lt.-Col. in the Army Sanitary Corps, where he has served as Maj. for over a year.

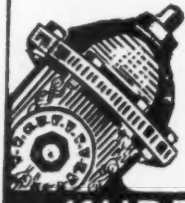
W. W. Towne, former Director, Div. of San. Engineering, South Dakota State Board of Health, is now Capt. in the Army Sanitary Corps. During 1941–42, he held a post as Asst. Prof. in the College of Eng., Univ. of Missouri, while on leave of absence from his Board of Health job, and

(*Continued on page 16*)

No Duration for

FIRE PROTECTION

Times like these test the mettle of men and machines. Kupferle Fire Hydrants installed as long as fifty years ago are in service today. Replacements for all Kupferle Hydrants are available. No Kupferle Hydrant will ever be an orphan.



JOHN C. KUPFERLE Foundry Co. ST. LOUIS

KUPFERLE FIRE HYDRANTS

Prevent Rusting

Rusta-Restor cathodic protection, provides *permanent protection* against rusting of water tanks, piping and steel structures of all kinds.

Initial cost of a complete equipment is about equal to the cost of a good paint job. . . . Operation costs only about 2 mills (i. e. $0.002) per year per square foot of surface protected.

If your tanks and steel structures are not now protected by this proven low-cost method, they should be. No obligation. Send for fully descriptive literature today.

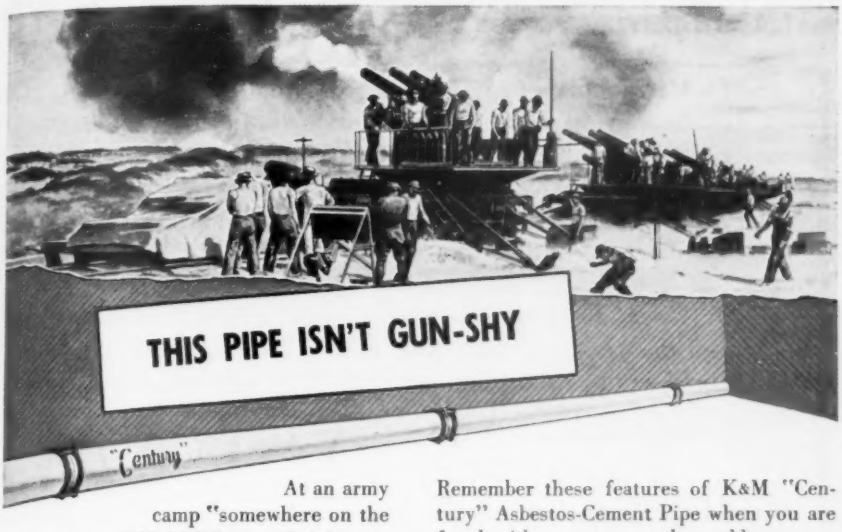
RUSTA-RESTOR

Division of

THE JOHNSTON & JENNINGS CO.

862 Addison Road Cleveland, Ohio

Looking ahead with Asbestos



At an army camp "somewhere on the Atlantic coast" K&M "Century" Asbestos-Cement Pipe is on military duty. It is serving as the permanent water system of this post—and long stretches of main run parallel to numerous big gun emplacements.

That's certainly no place for a pipe that can't take rough treatment. But it's just the job for "Century," for the vibration from the guns won't bother this pipe a bit. Why? Because the joints are flexible and leak-proof.

And that flexibility has served another important purpose on this job. It permits a deflection of as much as 5 degrees at every joint, which allowed "Century" to take curves without bends or special fittings ...and thus aided and speeded main-laying.

Remember these features of K&M "Century" Asbestos-Cement Pipe when you are faced with a water supply problem—now or in the future. Its adaptability simplifies many a construction difficulty. Its ability to withstand shakes and shocks without ill effect recommends it for lines that must cross bridges or run under culverts or railroads . . . Other points about "Century" are its light weight and easy handling, and its resistance to corrosion and tuberculation.

Even though wartime obligations still occupy most of K&M's facilities, we can supply some "Century" Pipe for government-approved municipal needs. The impetus given to research at K&M by the demands of war continues to bring gratifying results in improved products and methods—all pointing to greater accomplishments and better service in the "V" years ahead.

Nature made asbestos;
Keasbey & Mattison, America's asbestos pioneer,
has made it serve mankind . . . since 1873

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains.

K&M best in asbestos

(*Continued from page 14*)

since then has been serving as San. Engr. in the U.S. Public Health Service, at Cleveland.

Joseph M. Sanchis, of the Div. of San. Eng., Dept. of Water and Power, Los Angeles, has been commissioned Capt. in the Army and is on temporary duty in the Medical Field Service School at Carlisle Barracks, Pa.

Mr. Sanchis is familiar to JOURNAL readers as an abstractor of Spanish language water works literature.

H. H. Mace, formerly associated with Alfred LeFeber, Cons. Eng., and for the past 2½ yr. San. Eng. in the U.S. Engineers' Office, Cincinnati, is now serving as Capt. in the U.S. Army Sanitary Corps. He is on duty as San. Eng. in the Medical Inspector's office at Sheppard Field, Tex.

Gerald G. Kraft, formerly Field Chem. and Eng. in the Illinois State Water Survey, Urbana, Ill., is now Chem. Engr. in Charge of Water Treatment, Power Dept., Texas Co., Lockport, Ill.

Joseph D. De Costa, formerly Eng. in Charge of Distr., East Bay Munic. Utility Dist., Oakland, Calif., is now serving as Maj. in the U.S. Army.

James E. Morrison, former Purif. Engr. in the Seattle Water Dept., has become Mgr. of Utilities in his home town of Renton, Wash., in the new city administration.

Emil T. Chanlett has resigned from the U. S. Public Health Service where he was engaged in industrial hygiene activities in California and Oregon. He is now a 1st Lt. in the Army Sanitary Corps and is on duty with the Div. of Health and Sanitation of the Co-ordinator of Inter-American Affairs.

Wm. Correale, who was holding the position of Deputy Commr. of the Dept. of Water Supply, Gas & Elec. for New York City, is now serving in the armed forces, and H. B. Machen, formerly the Dept.'s Borough Engr. for Manhattan has been promoted to Acting Deputy Commr.

Fred B. Nelson, Civil Engr. for the Dept. of Water Supply, Gas & Elec., has been designated Acting Borough Engr. to take Machen's former position. Nelson continues to carry on his previous distribution system work.

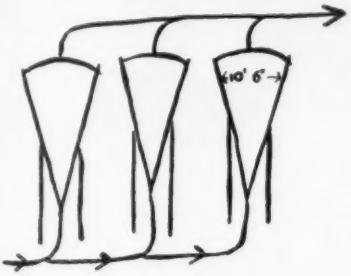
(*Continued on page 18*)

SOFT, CLEAR WATER IN 8 MINUTES BY NEW SPACE-SAVING METHOD

FIELD REPORT

THE PERMUTIT COMPANY, NEW YORK, N. Y.

Equipment: "SPIRACTOR" COLD LIME WATER SOFTENER
Installed at: [redacted]



Note small area for daily capacity of 3,000,000 gallons!

This plant has more than met specifications. Detention time is only 8 minutes. There is no sludge. Softened effluent is so clear that filters have little to do. Engineer much pleased at fine results and simplicity. Simply turned on the water and the chemicals—no time wasted in getting started.

WATER ANALYSIS	RAW WATER	SPIRACTOR EFFLUENT#
Total Hardness	180	40
Calcium Hardness	172	32
Alkalinity A (Methyl Orange)	180	40
Alkalinity B (Phenolphthalein)	0	20
Free Carbon Dioxide	20	0

#Before filter

Write for free bulletin to The Permutit Co., Dept. G2, 330 West 42nd St., New York, N. Y. In Canada: Permutit Company of Canada, Ltd. . . . Montreal . . . Toronto . . . Winnipeg . . . Calgary

PERMUTIT WATER CONDITIONING HEADQUARTERS

(Continued from page 16)

The WACs have come to the Indianapolis Water Co. Cecil K. Calvert, Supt. of Purification there, has employed three young women and the company calls them its Women's Auxiliary Chemists. They are replacing the men who formerly tested Indianapolis water before and after it is delivered to consumers. The WACs, from left to right, are Mrs. Betty Jane Wiggam, and the Misses Rhoda June Feltis and Barbara Jean Hoelscher.

(Continued on page 20)

ZECO GREENSAND ZEOLITE

Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

ZEOLITE CHEMICAL CO.
90 WEST STREET **NEW YORK, N. Y.**

"For Continued Effort"

OUR ARMY-NAVY FLAG
NOW CARRIES A STAR

The men and women of Builders are proud that their continued production record and spirit have again earned the Army-Navy Award "for meritorious services on the production front."
Yes, while we make postwar plans for days of peace, we do not forget that these are days of war. Since winning the coveted Army-Navy Award last summer we have relaxed not a bit in bending every effort toward the all-important and immediate task of winning the war.

BUILDERS
WATER AND SEWAGE WORKS
Equipment

BUILDERS IRON FOUNDRY
(BUILDERS-PROVIDENCE, INC.)
9 CODDING STREET PROVIDENCE, R. I.

(*Continued from page 18*)

Postwar financing of replacements and improvements in public works has been provided for by the 1943 session of the Ontario legislature. In an amendment to the Municipal Act, the legislature made it possible for a municipal council to include in its budget a reserve fund for post-war use by its public utilities.

Bi-monthly billing goes into effect at the Los Angeles Dept. of Water and Power in July, and the company expects to effect a saving of approximately $270,000 annually in expenses for customers' accounting and collection. The savings is expected to come from a reduction in the number of persons now required, lower postage and other mailing costs and lessened use of automotive and office equipment. The impulse to bill its 550,000 customers every other month came from the wartime problems the company, like others throughout the country, is facing—scarcity of gasoline, the necessity for conserving automotive equipment and a growing shortage of manpower and critical materials. An educational campaign to apprise the consumers of the new system is being carried on, and it is expected that the accumulation of two months' service charges will work no great hardship on them because of the low utility rates in Los Angeles.

(*Continued on page 32*)

RUST RUINS STEEL TANKS

They Cannot Be Replaced NOW!

"RUSTOP" *Cleans Old Tanks and Keeps New Tanks Clean*

Stops corrosion—immediately and permanently—prolonging useful life of equipment.

NO PAINT—NO TASTE

RUSTOP THE CATHODIC SYSTEM OF CORROSION PREVENTION

ELECTRO RUST-PROOFING CO.

DAYTON • OHIO

Meter Boxes
Meter Testers
Meter Yokes & Couplings

Valve Boxes
Service Boxes
Manhole Covers

Street Castings
Special Castings

H. W. CLARK COMPANY

Mattoon, Illinois, U. S. A.

(*Continued from page 30*)

Sanchis, Joseph M., 2745 Medlow Ave., Los Angeles 41, Calif. (Oct. '34)★

Sears, Dow I., *see* Fergus Falls Water & Light Dept.

Shogren, O. C., Purif. Plant Foreman, City Water Dept., 311 Alderson Ave., Billings, Mont. (Apr. '43)

Steindorf, R. T., *see* Chain Belt Co.

Stepleton, H. A., 3515 Maxwell Rd., Toledo, Ohio (Apr. '40)

Streeter, Robert L., Civ. Engr., c/o Crocker & Ryan, Box 1105, Colorado Springs, Colo. (Apr. '37)

Taulman, W. D., 610 Red Rock Bldg., Atlanta, Ga. (July '35)

Universal Construction Co., 1158 W. 34th St., Indianapolis 8, Ind. (Assoc. M. Apr. '41)

Vancouver, City of, E. M. Armstrong, Supt., Water Dept., Vancouver, Wash. (Corp. M. Apr. '40)

Vickery, John U., Sewage Disposal Plant Operator, U.S. Naval Air Station, Fort Lauderdale, Fla. (July '39)

Walton, Graham, U.S. Public Health Service, Dist. 8, 617 Colorado Bldg., Denver 2, Colo. (Jan. '41)

Water & Sewage, K. J. Salmond, 341 Church St., Toronto 2, Ont., Can. (Assoc. M. May '16)

Wilkins, George F., Eng. Service Div., General Chemical Co., 235 Montgomery St., San Francisco 4, Calif. (Jan. '40)

Wood, Leonard P., 118 Ralph Ave., White Plains, N.Y. (Mar. '24) *Diven Medal '34.*

MEMBERS ENTERING MILITARY SERVICE

Barclay, Joseph L., Hydrographer, Bureau of Water Works & Supply, 2411 S. Curson Ave., Los Angeles, Calif. (Jan. '41)★

Brinck, C. W., Asst. Director, Water & Sewage Div., State Board of Health, Helena, Mont. (Jan. '43)★

Brown, L. V. Z., Sales Engr., Wallace & Tiernan Co., Inc., 3900 Purdue St., Dallas 5, Tex. (July '38)★

Crawford, William H., 5013 N. Sydenham St., Philadelphia, Pa. (Jan. '36)★

Hudson, Leverne D., 333 E. 4th St., Flora, Ill. (Oct. '41)★

Sanchis, Joseph M., 2745 Medlow Ave., Los Angeles 41, Calif. (Oct. '34)★

Tripp, Garner C., Jr., Assoc. Engr., Whitman, Requardt & Smith, 11 N. Pearl St., Albany, N.Y. (Jan. '41)★

Announcing

THE SECOND CONFERENCE ON WARTIME SANITATION

AND

FOURTH ANNUAL BUSINESS MEETING

OF THE

FEDERATION OF SEWAGE WORKS ASSOCIATIONS

To be held at

CHICAGO, ILLINOIS

October 21-23, 1943

●

FEDERATION OF SEWAGE WORKS ASSOCIATIONS

Box 18 URBANA, ILL.

(*Continued from page 20*)

REPORT OF PACIFIC NORTHWEST MEETING

The sixteenth annual meeting of the Pacific Northwest Section was held in Bellingham, Wash., at the Leopold Hotel, May 7–8, 1943.

There were 184 people registered, of which 118 were members.

The meeting was opened at 9:00 A.M. by Arthur H. Howard, Mayor of Bellingham, and the Chairman of the Section, W. J. Moore, Water Supt., Eugene, Oregon.

New members were introduced to the meeting by E. N. Hallgren, Chairman of the Membership Committee; 27 new members have joined the Section.

The following officers were elected for the current year: W. C. Morse, Water Supt., Seattle, Wash.—Chairman; R. F. McLean, Water Supt., Walla Walla, Wash.—Vice-Chairman; Wm. P. Hughes, City Engr., Lewistown, Idaho—Secy.-Treas. The new members of the Board of Trustees are: W. C. Morse, R. F. McLean, S. J. Benedict, C. H. Williams, Alex Lindsay, and Wm. P. Hughes.

Samuel B. Morris, A.W.W.A. Vice-Pres., and Dean of the School of Eng., Stanford Univ., spoke on "Priorities, Surplus Stock and Materials" and discussed the new regulatory order U–1. He stated that "during the early months of the war, total inventories of utilities were built up. The new order U–1 should bring these inventories down and still make it easier to get new materials, with proper priorities. U–1 provides that one and a third times the amount of inventory used or sold during the last three-quarters of 1942 may be replaced in 1943. However, most utilities had very low withdrawals during that period, because of little new construction permitted, and this will work a hardship in some cases. U–1 also permits withdrawal of one-third of the same amount, subject to revisions due to growth of population.

"Also, according to U–1, if you do not agree to sell your surplus inventory, you may lose your right to make new purchases. Just what may be considered surplus stock, and what may be considered a fair price at which to sell it, is difficult to interpret."

The many interpretations of U–1 were discussed from the floor, and a resolution, objecting to certain features of Utilities Order U–1 was submitted and passed, to be forwarded to A.W.W.A. headquarters with further action.

"War Gases and Their Effect on Water Supply" was the subject of Maj. G. E. Arnold's talk to the conference. Maj. Arnold told why we might expect attack by gas; what was being done by the Army and by Civilian Defense in preparation for such attack; and what should be done by those connected with water systems in the event of an attack.

(*Continued on page 34*)

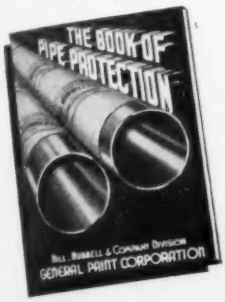
THE FOUR FREEDOMS COME FIRST

CONSTITUTION
OF THE
UNITED STATES of AMERICA

We the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquillity, provide for the common defence, promote the general welfare, and secure the blessings of liberty to ou and our posterity, do ord and establish this Co the United States

RELIGION
✦
SPEECH
✦
PRESS
✦
ASSEMBLY

Write today for detailed information contained in "THE BOOK OF PIPE PROTECTION"



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Steel Pipe Protection can wait

We believe that maintaining the FOUR FREEDOMS is more important than anything that we, or you, Or You, OR YOU, may want to do;—that's why our production facilities are directly geared to the war's demand.—But when the peace is won, you will find HILL-HUBBELL with even more to offer you.

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(*Continued from page 32*)

Maj. Arnold advised anyone leaving an area affected by mustard gas to rush into the nearest house and demand a bath, and by all means to throw away his shoes. The gas is heaviest on the ground and will linger and penetrate through the heaviest shoes.

Against gases affecting the lungs, cloths dipped in plain household Clorox or Purex and held over the mouth and nose during the rush out of the affected area is an emergency expedient. Vaseline spread on the face will help prevent surface burn from chlorine solutions.

The effect of gases on water supply may or may not be serious, depending on the type and method of dropping. If in spray form, it will not do much to infect water in deep reservoirs, or in natural resources; if in bomb form it would have to be a direct hit on one reservoir and that reservoir could be immediately shut off—or if needed in event of fires, the public served by the reservoir could be warned either not to use the water or to boil it very thoroughly before using it.

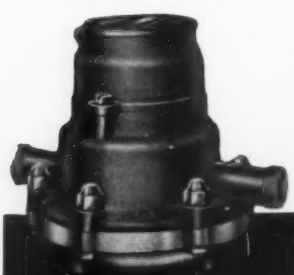
Maj. Arnold urged that all water superintendents get in touch with their local offices of Civilian Defense to find out the quickest means of having chemical tests made, in event of attack.

Max S. Campbell, State Water Supply Director, Washington State Defense Council, outlined the work done by the Committee on Emergency and Mutual Aid Water Works Defense. R. E. Dodson Jr., Assoc. San. Engr., Oregon State Board of Health, reported the operation of the Mutual Aid plan in detail, with particular reference to its application in Oregon. Mr. Dodson stated that the first need was a plan which would work in an emergency, and that by working from county to county and getting a leading water works man to help, his committee assembled complete inventories of repair material, equipment, supplies, etc., to take care of emergencies, if and when they arise.

T. P. Evans, Chief Engr., Washington Surveying and Rating Bureau, spoke on "Underwriter's Grading of Water Supply" and emphasized the importance of the reliability of a water supply, especially during the present

(*Continued on page 36*)

NIAGARA IRON CASE WATER METERS



provide wartime copper conservation plus the time-proved Niagara design. They comply with victory-meter limitations. Works are interchangeable with American Bronze Case Meters.

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Established 1892 2914 Main St., Buffalo, N.Y.

Announcing

"SEE-THRU" PUMP HEAD
Moulded, transparent plastic material to corrosive effect of all water works chemicals.
Built-in twin sight feed chambers.
Visible check valve operation.
Patented, fabric reinforced, molded, dished diaphragm. Large enough to allow reasonable stroking rates with resulting long life of all moving parts.
Tubing Type connections eliminate metal hose clamps.

3 STEP CONE PULLEY
V-Belt drive through 3 step-cone pulleys allows three separate stroking rates in addition to full stroke length adjustment for widest range of feed or dosage.

ELECTRIC MOTOR
Standard 1/6 h.p. electric motor available everywhere mounted on swing base for easy belt tension, adjustment provides ample power. Belt drive from 1725 RPM ideal as Chem-O-Feeder has built-in speed reduction.

UNIT FRAME
Enclosing case of one piece cast iron construction makes a rigid frame of great strength and pleasing contour for Chem-O-Feeder mechanism. Mounting holes or slots cast in frame.

DOSAGE CALCULATOR
(For Hypochlorinators)
No more fiddling or hunting for instruction books, delivery curves, etc. Permanently attached to Chem-O-Feeder is the Dosage Calculator which tells all. How to make up solutions. How to set feeder for proper stroke length and stroking rate. All this information for several dosages and many pumping rates.

OIL FILLER CAP
Chem-O-Feed mechanism operates silently with negligible wear immersed in oil bath. Conveniently filled here (drain in back).

HEAVY DUTY
Chem-O-Feeder

Designed by 1000 Waterworks men, backed by % Proportioneer's % experience in over 10,000 successful installations as well as our iron clad guarantee.

Continuous Feed
Adjustable While Operating
Designed for Long Life

BEARINGS
Lifetime Ball Bearings immersed in oil bath support all rotating shafts.

CHEMICAL FEED SELECTION KNOB and VISUAL STROKE LENGTH INDICATOR
Chemical feeding rate may be selected and changed at will while the Chem-O-Feeder is operating by mere twist of knob. Feed selection knob which is directly connected to displacement mechanism and observation of visual stroke length indicator. Stroke length indicator dial fully protected by plastic cover.

WEEP HOLE
Full length bearing with oil seal for push rod prevents chemical from entering Chem-O-Feeder casing in event of diaphragm rupture and forces it out weep hole provided in Plastic Pump Head Mounting Collar.

% PROPORTIONEERS, INC. %
"Chemical Feeder Headquarters"

61 Codding St., Providence, R. I.

(*Continued from page 34*)

wartime emergency. He gave the bases of grading by the Rating Bureau, and concluded his talk with the suggestion that designers of water systems consult with the Washington Surveying and Rating Bureau regarding new installation or contemplated changes in present systems in order to determine standard requirements so that minimum deficiency charges may be made against the system when the Standard Grading Schedule is applied.

John Cunningham, Cons. Engr., Portland, Ore., described the Bellingham Water System and an invitation was extended to those in attendance to visit the plant. The invitation was accepted 100 per cent by the conference.

Kenneth H. Spies, Acting State San. Engr., Portland, Ore., discussed at length the possible rôle of water in the transmission of virus diseases, especially infantile paralysis.

Ben S. Morrow, Chief Engr. and Gen. Mgr. of the Water Bureau, Portland, Ore., led a round-table discussion of postwar plans, pointing out that now is the time to prepare plans and specifications for future improvements to water systems. Morrow offered twenty suggestions for furnishing postwar employment through improvement of water systems.

Carl E. Guenther, Mgr. of the Salem Water Dept., Salem, Ore., and Jack C. Strudgeon, Supt. of the Parkrose Dist., Parkrose, Ore., talked on the development of large and small water systems.

Wm. P. Hughes, City Engr., Lewiston, Idaho, presented the meeting with a picture of victory gardening in many of the leading communities of this country, as well as in England, and showed what can be earned from the sale of vegetables grown in gardens. The consensus seemed to be that water districts are under no greater obligation to furnish water at no or low rates, than the seed, fertilizer and garden tool dealers are obliged to give away their products; that water districts should have some standard of evidence of good faith as well as intent to farm acreage before water is turned on; that with materials difficult to obtain it is up to the water district to protect its stock for maintenance of regular service, rather than supplying victory garden acreage. Hughes also gave a short talk on "Short Schools and Licensing of Operators."

R. A. Duff, Water Supt. at Medford, Ore., presented a paper on "Development of Water Supply for Wartime Needs."

C. C. Casad, Water Supt., Bremerton, Wash., was chosen for the Fuller Award, in recognition of his outstanding achievements. M. H. McGuire, Chairman of the Fuller Award Committee for the Section, and winner of the award in 1942, cited Casad as "the Water Superintendent of a town which has trebled its population in less than three years, without lessening of the efficiency of its water supply or excellence of its health rate."

(*Continued on page 38*)

ADEQUATE FIRE PROTECTION

Water Works Officials are being called upon to furnish adequate fire protection for our war industries. Water works interests must also be protected. This protection is amply afforded by Hersey Detector Meters, which are operating in most of the larger plants. Years of experience with Hersey Detector Meters have given positive proof of their accuracy and dependability. Approved by the National Board of Fire Underwriters.

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(*Continued from page 36*)

Harold D. Fowler, Seattle, Wash., Chairman of the Gadget Committee, presented the first prize of $15.00 for Miss Irene Melbo, Bellingham Water Dept., for her "portable valve opener," while the second prize of $10 went to Herbert Carson, Asst. Supt., Water Dept., Everett, Wash., for his invention of a "service pipe puller."

Brian L. Shera, Chairman of the Committee on Safety, and Service Engr. for the Pennsylvania Salt Co. of Washington, spoke on "Safety Practices" and brought out the fact that an increase in accidents was expected in 1942, due to war conditions, but that actually fewer water works accidents had taken place, due to the fact that the number of employees has decreased and the extra help frequently picked up for seasonal work has vanished. Also, the man-hours worked were far below 1941 figures. These facts indicate that only older, more experienced employees are left.

Capt. Fred Merryfield, who was Secy.-Treas. of the Section for some years past, has joined the armed forces and is now with the Army in Australia. Archie H. Rice, who substituted for Merryfield, also joined the armed forces, and this left the section without a Secy-Treas. at the opening of the 1943 Conference. Chairman Moore took care of the Secy's. duties until after the election of new officers, when the new Secy-Treas. took over.

The motion picture "The Battle of Midway" was shown on the closing night of the Conference.

WM. P. HUGHES
Secretary-Treasurer

REPORT OF MONTANA SECTION MEETING
Billings May 14–15, 1943

Maj. Biddinger, incoming executive of Billings, opened the Montana Section Wartime Conference with the declaration that in his administration the city water supply system would be improved as necessary and would be given his continued support. Qualified employes need not fear removal. Also to the point was his declaration that abatement of stream pollution would follow as soon as materials for sewage treatment plant construction are available.

No apparent progress in legislation to license or protect water works men in their employment has been achieved during the past year, intimated F. F. Palmer outgoing Chairman, in his opening address. He also spoke of the critical materials situation which seems to be somewhat easier. Considerable relief through availability and use of substitutes materials is in sight.

Dean Samuel B. Morris, President-elect of the A.W.W.A., described new developments in the field of materials. The war has effected a speed-

(*Continued on page 40*)

DIFCO

Direct Plate Counts of Coli

Bacto-Brilliant Green Lactose Bile Agar

is an excellent plating medium recommended for direct counts of coliform bacteria in water. This medium conforms to the formula of Noble and Tonney as described in "Standard Methods of Water Analysis" 1936. After incubation for 18 hours at 37°C. typical colonies of coliform types are deep red and are surrounded by a pink halo.

Bacto-Violet Red Bile Agar

is a recommended medium for direct plate counts of the coliform organisms in water. On plates of this medium the coliform types produce red colonies surrounded by a reddish zone of precipitated bile. Counts are made after incubation at 37°C. for 18 hours.

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SAVE FOR VICTORY

EVERYWHERE Americans are being asked to "SAVE FOR VICTORY." Water works superintendents, engineers and public officials can do more in this connection by investigating the National Method of water main cleaning. This method restores the carrying capacity of pipe to at least 95 per cent of that of new mains, thereby eliminating the necessity for purchase of new mains. Aside from this the National Method makes possible lower pumping costs, greater delivery, reduced insurance rates and clean water.

Now is the time to do your part—SAVE FOR VICTORY

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BRANCHES

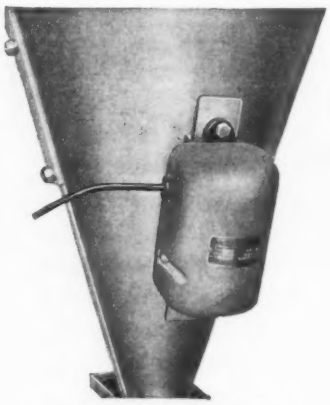
115 Peterboro St., Boston, Mass.
910 William Oliver Bldg., Atlanta, Ga.
7103 Dale Ave., St. Louis, Mo.
576 Wall St., Winnipeg, Man., Canada
3812 Castellar St., Omaha, Neb.
205 West Wacker Drive, Chicago, Ill.
501 Howard St., San Francisco, Calif.
2028 Union Ave., Montreal, Canada

(*Continued from page 38*)

ing up of these developments and will result in their availability in postwar days. Greater efficiencies in power units, new steels, new glass, new fuels, are to be ours. In the electrical field startlingly greater power and utility are coming. One who heard him remarked that with each revelation the Dean seemed more and more to be a messenger from another, and as yet, unbelievable world.

A visitor from North Dakota, Ken Lauster, State San. Engr., related further experiences with corrosion control at Richardton in his state. This situation was first called to our attention in 1940 when Lloyd Clark, then State San. Engr. in North Dakota, described efforts to combat the conditions produced by the pumping and distribution of well water with a high carbonic acid content. Hexametaphosphates alone or chlorine alone have not been entirely successful, but in combination appear to hold promise of relief from the "red water" plague of this community. It is this writer's opinion that we may look to the travails of this community and to the perseverance of all connected with its efforts to combat the evil for practical knowledge which will be a benefit to many of us who are confronted with a similar dilemma.

(*Continued on page 42*)



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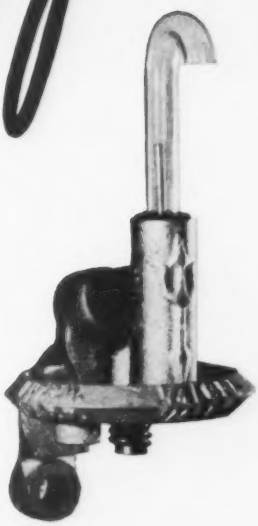
Orifices vs. g.p.m.

IN TESTING WATER METERS



WITH a 1/16" stream (a 1/16" orifice in a thin plate) at 60 lbs. per square inch, the smallest rate of flow will be about half a gallon a minute: and depending on the edges of the hole, it might run as high as 9/10 g.p.m.

EVEN with only 40 lbs. pressure the minimum would be .44 g.p.m., a flow which is still nearly double the desired low flow test rate for the 5/8" meter.

HOWEVER, with a good rate of flow indicator it is possible to obtain easily and with accuracy, at any pressure, the desired test rate of 1/4 g.p.m. for the 5/8" meter. This is next to impossible with a fixed orifice.

THE Neptune Rate of Flow Indicator is a simple, positive, and inexpensive device which may be applied to any test bench. Your Neptune Representative will be glad to arrange for a demonstration.

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Neptune Meters, Ltd., Long Branch, Ontario, Canada.

(*Continued from page 40*)

Clark's paper is available from the Montana Section Secy., and Lauster's contribution will later be ready for distribution.

Genial Maj. G. E. Arnold of the San Francisco OCD captivated his audience as usual when he explained the role of war gases and their possible effects upon water supplies. Respect for war gases comes he said through knowledge of their constitution and power. He pointed out that the prime purpose of war gases is against personnel and not property and we may well anticipate being visited by them. He recommended that, if contaminated at any time, a person should remove his clothing quickly and thoroughly wash with soap and water, unless more effective materials are immediately at hand.

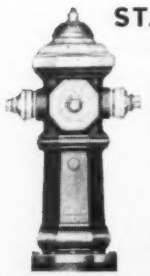
Three gases, he told, are of paramount interest and importance as being the most likely to be contacted: Phosgene, Chloropicrin and Mustard. In water supplies these are hydrolized. They will raise the chlorine demand, reduce the pH_4, will probably impart unfamiliar odors and appearance to the water. Heavy chlorination, the usual water filtration plant practices, and carbon are effective neutralizers, he pointed out. In case of doubt on the part of water men, appeal should be made at once to those in position to make tests and to evaluate damage done.

Dr. Steinhaus of the Rocky Mountain Laboratory of the United States Public Health Service, Hamilton, Montana, read a paper on Tularemia (see complete text of paper in this JOURNAL).

A mutual aid program, as described by H. B. Foote, State Water Coordinator, in operation in Montana, is well organized and has collected significant information from water supply operators serving 92 per cent of the urban population in the state. Seventy per cent of all the public water supply men have responded. The association in a later meeting voiced the opinion that the program should by all means be continued, even though to date no occasion has arisen which called for its activity.

"Montana now has a workable law to assist in financing sewage treatment plant construction and operation," said State Legislator C. J. Williams

(*Continued on page 44*)



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Filter Plant Equipment

COMPLETE LINE

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is being defined today in the test tubes and equipment of our laboratory staff.

Among the better things America is fighting for, a better way is assured to produce potable and palatable drinking water—thanks to ozone and the current research and development program of this organization.

We invite every progressive water works man interested in a better taste, odor, and color removal process to discuss his problem with us.

Write for our new booklet "An Introduction to the Ozone Treatment of Water."

OZONE PROCESSES INCORPORATED

1500 WALNUT STREET, PHILADELPHIA, PA.

A wholly owned subsidiary of Welsbach Engineering and Management Corp

(*Continued from page 42*)

of Billings. Through his efforts in the last session the necessary bill was introduced, passed and signed by Governor Ford. Sewer rentals may be levied and revenue bonds may be issued; and this will assist materially in our much needed work of alleviating stream pollution.

The Montana Section is in a healthy condition at this time, according to the Secretary's report. With 45 members on the books, and with the 46th making application, our rolls are the largest in history. Two members were reported as being in the armed services. This is not a large percentage.

Eugene Carroll, veteran Civ. Engr. and Butte Water Co. Manager, was nominated for the Fuller Award. Wade Plummer of the Butte Water Co., in reporting for the committee, called attention to the fact that Carroll has been an A.W.W.A. member for nearly 40 years, and is a pioneer in water treatment practices which today are commonplace. He has always held out a helping hand to the younger and less experienced men, as many in Montana can well attest. The selection was unanimous by the committee as well as by the section as a whole.

The Chairman appointed a special committee to develop a policy in regard to a school for water works operators. It was not possible to have such a school this year. President Cobleigh of the State College, who had

(*Continued on page 46*)

NO Skilled LABOR

needed to lay McWane 2" THREADED joint pipe. The long 18 ft. lengths are screwed together — above ground —easily, quickly—with a wrench. No other pipe lays so fast—or lasts so long. Immediate shipments!

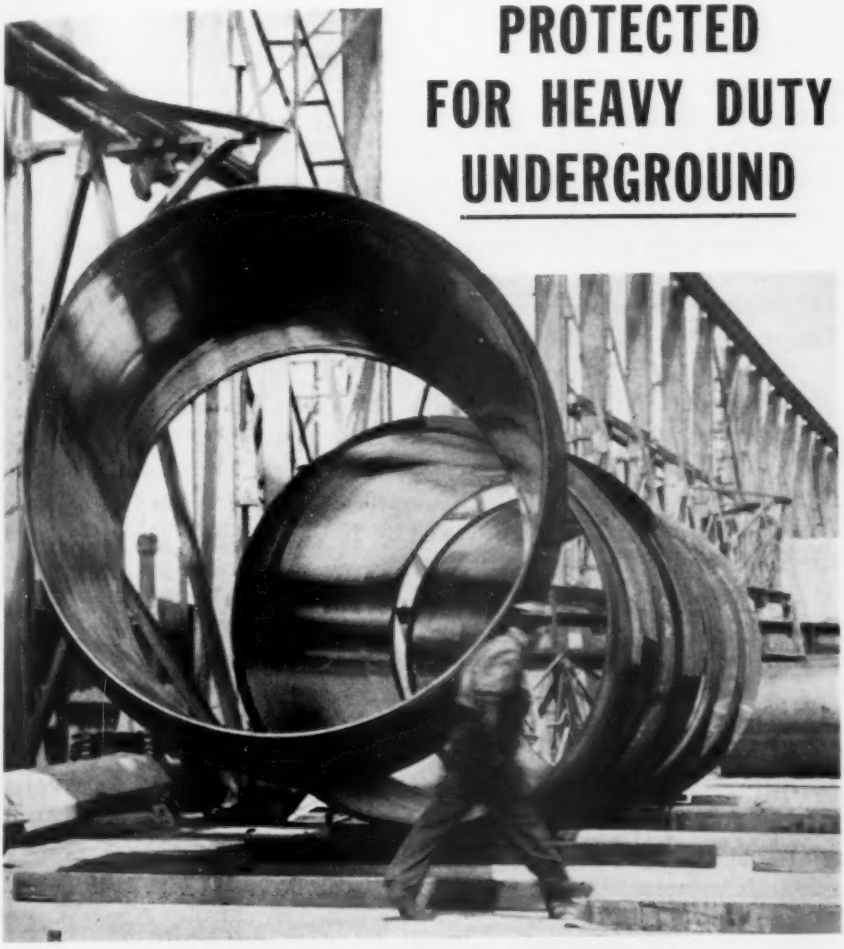
McWANE CAST IRON PIPE CO.
BIRMINGHAM, ALA.

McWANE 2" CAST IRON PIPE

SAVE MONEY USE ACTIVATED ALUM and BLACKALUM

STUART-BRUMLEY CORP.
516 North Charles St.
Baltimore Maryland

PROTECTED FOR HEAVY DUTY UNDERGROUND



Friant Dam, U. S. Bureau of Reclamation. Barrett Enamel.

● Lined with Barrett Waterworks Enamel, this pipe is ready to carry and maintain a full-capacity load. Engineers know that its hard, mirror-like finish permits a constant, efficient flow. Low in initial cost, this lining keeps maintenance costs at a minimum, is a non-conductor and resists water absorption.

This superior coating meets the requirements of the American Water Works Association. Made from the most stable bituminous material known for underground pipe protection, the coating is dielectric and can withstand mechanical stresses and wide extremes in temperature.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK

FIELD SERVICE—The Barrett Waterworks Service Department and staff of Field Service men stand ready to provide a broad measure of cooperation. The services available include consultation on technical details, training of crews, and job inspection.

Barrett WATERWORKS ENAMEL

(*Continued from page 44*)

previously led our schools, was too occupied with his official duties to prepare a program and also it was agreed that prospective attendants should not be urged to leave their respective stations for too long a period. The committee's report, unanimously adopted, declared that the section officers should, as soon as possible, make suitable arrangements so that the school will be continued.

A committee has also been created, with F. F. Palmer as leader, to study and report at the next session on the question of a voluntary plan of licensing or registration of water works operators, as described by Ken Lauster and Maj. Arnold.

Those who will direct the affairs of the section during the coming year are: S. R. Young, Water Supt., Hardin, Chairman; A. E. Heath, Foreman, Water Dept., Billings, Vice-Chairman; John Hall, Ft. Shaw, and C. C. Moore, Great Falls, Trustees; and H. B. Foote, Secy.-Treas.

The town of Bozeman, Fred Quinnell, City Mgr., will be host in 1944.

The banquet and dance, attended by 160, finished off the affair in an appropriately gay manner.

H. B. FOOTE
Secretary-Treasurer

(*Continued on page 48*)

WATER REFINING EQUIPMENT HEADQUARTERS
INDUSTRIAL—PROCESS
RAILROAD—MUNICIPAL—HOUSEHOLD

FILTERS Of All Types *and* Capacities . . . Gravity . . . Pressure

SOFTENING SYSTEMS
All Types *and* Capacities—Zeolites (*synthetic and natural*) and Lime and Soda

CHEMICAL FEEDERS (wet or dry)
Acids . . . Hypochlorites . . . Alkalies

EQUIPMENT FOR REMOVAL
Of Iron . . . Taste . . . Odors . . . Colors . . . Suspended Matter

SWIMMING POOL EQUIPMENT
AERATORS · DE-GASIFIERS
WATER TEST SETS
RE-CARBONATORS

The **AMERICAN WATER SOFTENER COMPANY**
WATER REFINING EQUIPMENT HEADQUARTERS
INDUSTRIAL · PROCESS · RAILROAD · MUNICIPAL
HOUSEHOLD, ETC.
322 LEHIGH AVE., PHILA., PA.

Filter Sand and Gravel

WELL WASHED AND CAREFULLY GRADED TO ANY SPECIFICATION.
PROMPT SHIPMENT IN BULK OR IN BAGS OF 100 LB. EACH.

Inquiries Solicited.

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P. O. Box 307, Muscatine, Iowa

Peerless Pumps

America's largest selling pumps—for all services in all industries . . .
Ask for Literature

TURBINE, HI-LIFT AND HYDRO-FOIL TYPES all forms of drive—capacities from 10 to 100,000 g.p.m.

PEERLESS PUMP DIV. · Food Machinery Corporation
Factories: Los Angeles, San Jose, Fresno, Calif. and Canton, Ohio

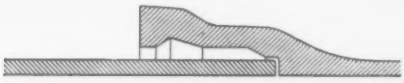
Clow-National

CAST IRON PIPE AND FITTINGS

CAN BE FURNISHED TO MEET THE REQUIREMENTS OF ALL EXISTING SPECIFICATIONS

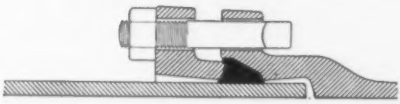
SUPER-deLAVAUD CENTRIFUGALLY CAST

The standard water bell is the most common type of cast iron pipe joint—popularly known as the "bell and spigot" joint. Available in sizes 3 to 24 inches inclusive, in 12 and 18-foot lengths, and for working pressures up to 250 pounds.



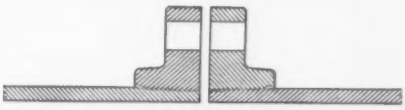
Standard Water Bell

A time-saving, easily installed mechanical joint cast iron pipe now used extensively. Made in all sizes from 3 inches through 24 inches, in 18-foot lengths, and for pressures up to 250 pounds.



"C-N" Mechanical Joint

Cast iron flanged pipe is widely used for exposed pipe line work, inside and outside of buildings, for conducting water, steam, gas, oil and other fluids. Comes in same sizes and for same pressures as listed above, and in 12 and 18-foot lengths.



Flanged Joint

At last—THE PERFECT "TEST PLUG"

NO LEADING OR CALKING—ONLY A RATCHET WRENCH NEEDED

F-1170 Test Plug made in sizes 3 to 12 inches

Use it for testing newly laid mains as work progresses and for protection against introduction of foreign matter into open pipe ends at the close of each day's work—or for temporarily plugging the bell opening of pipe or fitting awaiting future extension of service.

Plugs are shipped complete—ready for use—with tappings (closed by screw plugs) provided for pressure pump connection and for venting air. We furnish nipple and shut-off cock for air release.

Makes an ideal cleanout plug

EASILY INSTALLED—EASILY REMOVED

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201-299 N. Talman Avenue (P. O. Box 6600 A) **CHICAGO 80, ILLINOIS**

NATIONAL CAST IRON PIPE

(A Division of James B. Clow & Sons)

BIRMINGHAM 1, ALA.

Everything for the municipal water supply system

(*Continued from page 46*)

Dr. Otto Eisenschiml, Chicago chemist and writer and lecturer on American historical topics, has been lecturing civilian defense groups during the past year on what to do in case of gas attacks and has recently published a pamphlet giving his information in succinct form to other speakers. "A Popular Lecture on Poison Gases," which has been approved by army and navy officials, includes notes on popular demonstrations, and an outline of specific steps to take. The outline may be mimeographed for distribution to the lecturer's audience. The pamphlet may be obtained by those engaged as *bona fide* civilian defense leaders from Dr. Eisenschiml at 1637 S. Kilbourn Ave., Chicago.

Plans to purchase the Wilkinsburg, Pa., water works, have been abandoned, according to a report from Charles L. Fox, of the Pennsylvania Water Co. at Wilkinsburg. In newspaper reports the reason given was that the deal could not be arranged without long delay and expensive proceedings. A Wilkinsburg Authority had been established and served adjacent communities challenged the legality of the ordnance which created the authority.

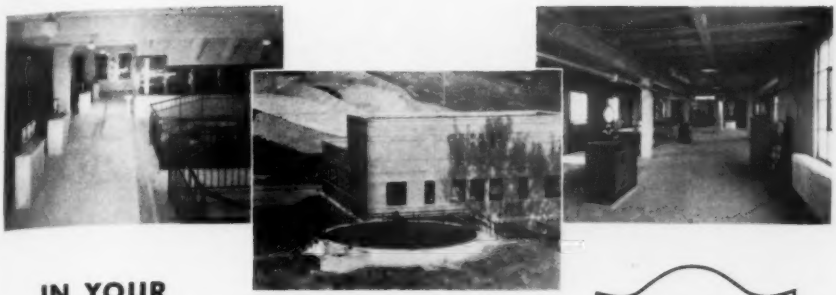
(*Continued on page 50*)

ANY OLD JOURNALS FOR SALE?

Do you have back issues of the JOURNAL which you will make available to the Association to help replenish its stock? Send a post card telling which you have of the numbers listed below and 50 cents will be paid for each copy obtained.

1920—January, March
1922—January, March, May, July
1924—January, March, May, July, September
1925—August
1926—January, February, March, April, May, June, July, August, September, October, November, December
1927—July
1928—January
1929—January, February, March, April, October
1930—January, February, April, May, November, December
1936—January, March, April
1937—January, March, July, October
1938—January
1939—January, March, October
1940—January
1941—July, September
1942—January

American Water Works Association
500 Fifth Avenue **New York 18, N. Y.**



IN YOUR POST WAR PLANNING

Remember—

The INFILCO Equipped Water Purification Plant CENTRALIZES EQUIPMENT RESPONSIBILITY AND ASSURES COORDINATED RESULTS

You are invited to make use of the experience gained by Infilco during the 40-odd years of designing and manufacturing every type and size of water purification equipment.

In furnishing everything required for water conditioning—from Accelators to Zeolites—Infilco offers you the important advantage of undivided responsibility for successful equipment operation.

And—your plant will be in step with modern developments, because Infilco has always been the first to introduce and adopt worthwhile improvements, as well as first to discard anything proving to be a hindrance to progress.

The services of its staff of experienced engineers and laboratory facilities are at your disposal for the asking.

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Accelators
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Clarifiers
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Hydrodarco Purifiers
Level Controls
Lime Slakers
Loss of Head Gauges
Mixing Equipment
Pressure Filters
Proportioners
Recarbonators
Rotary Distributors
Samplers
Settlers
Sewage Activators
Sewage Equipment
Sewage Griductors
Venturi Tubes
Wagner Underdrains
Water Filters
Water Softeners
Zeolites

(*Continued from page 48*)

The sale of five water plants to the communities which they serve is being effected by the Alabama Water Service Co., a subsidiary of the Federal Water and Gas Corp. The Water Works Board of Pritchard, Ala., is buying its water works for $500,000. Cordova is purchasing a system which supplies Cordova and Parrish for $115,000, while the Water Works Board of Jasper is the purchaser of a filtration plant which serves Cordova, Jasper, and Parrish. The Water Works Board of Attalia for the price of $155,000 will take over the water company servicing Attalia and environs.

A state-wide organization to administer all the water works within the state of Chihuahua, Mexico, has been set up by an act of the Congress of Chihuahua. Called the Central Board of Water, it is composed of representatives of the State Executive, the Chambers of Commerce and Landowners, and the Health Authority. It will administer the water service in those towns and cities which already have water systems and will be in charge of design and construction of new projects. Francisco Chavez Holguin is Pres. of the Board. Juan Valenzuela, Secy. of the Board, will also serve as Director of the water works of the city of Chihuahua.

With all the seas to drink, the fear of drouth should shrink: Because the development of means to turn salt to sweet water are now legion. It is reported that the British already have such devices in operation in their lifeboats and rafts. The JOURNAL News of the Field in May 1943 reported the work of Dr. Alexander Goetz of the California Inst. of Technology Rare Metals Inst. A later report says that Dr. Goetz has assigned the patent for the process to the Sunshine Mining Co. of Yakima, Wash. The sea water is reportedly treated by precipitating the toxic salts by using silver oxides and carbonates as the reacting agents. A second filtering and treatment neutralize the high alkalinity formed by the first reaction.

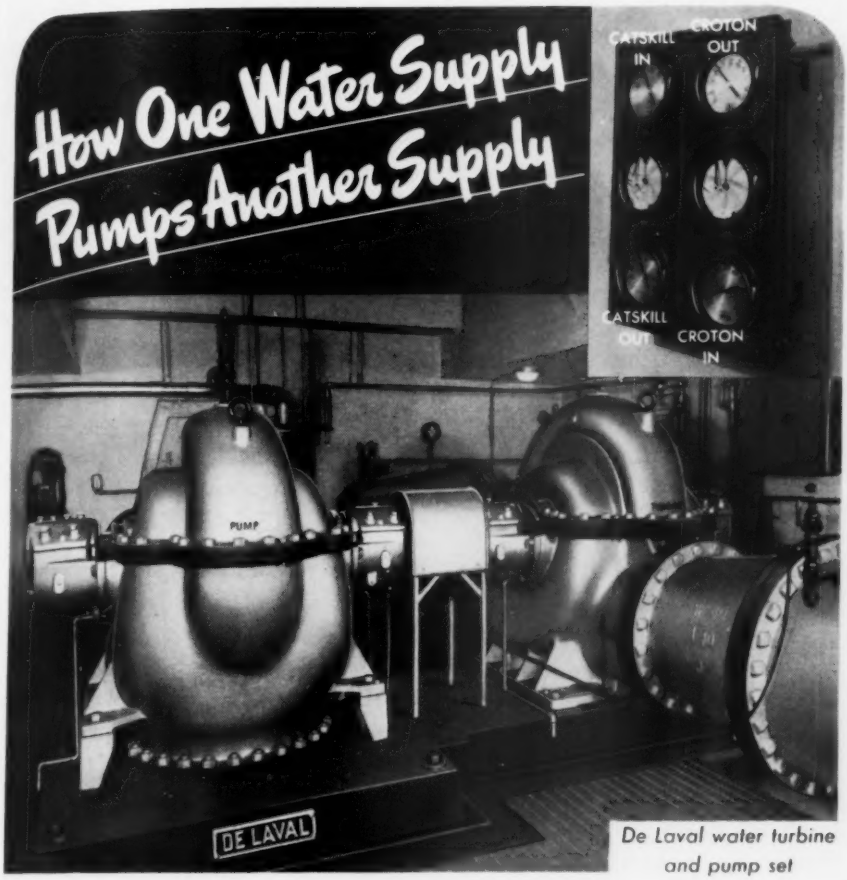
(*Continued on page 52*)

THE COAGULANT
THAT CUTS COSTS

Write today for actual case histories
of water plants now using Ferri-Floc.

TENNESSEE CORPORATION
Ferri-Floc
FERRIC SULPHATE

TENNESSEE CORPORATION
ATLANTA, GEORGIA LOCKLAND, OHIO



De Laval water turbine and pump set

The De Laval Water Turbine and Centrifugal Pump set here shown is located in a room beneath one corner of the Public Library, 40th St. and Fifth Avenue, New York City. At full capacity the water turbine, receiving 20,800 g. p. m. of Catskill water under 210 ft. head and discharging to its distribution system against 120 ft. head, drives a pump operating at 560 r. p. m., which delivers 21,000 g. p. m. of Croton water to its distribution system against 100 ft. head. The positive head at the suction nozzle is 35 ft. and 392 hp. is delivered by the water turbine

The speed of the unit is automatically regulated by a hydraulically operated throttle valve in the turbine discharge line, actuated by the pressure therein. No particular attention is necessary other than occasional inspection of the lubricating system

De Laval engineers will gladly help in solving your pumping problems.

4107

DE LAVAL Steam Turbine Co.
TRENTON, N. J.
MANUFACTURERS OF TURBINES . . . STEAM, HYDRAULIC, PUMPS . . . CENTRIFUGAL, CLOGLESS, ROTARY DISPLACEMENT, MOTOR MOUNTED, MIXED FLOW, PROPELLER, PRIMING SYSTEMS, CENTRIFUGAL BLOWERS and COMPRESSORS, GEARS . . . WORM, HELICAL and FLEXIBLE COUPLINGS

COOK Well Strainers

A reciprocal relation, the life and functioning of the one depending much on the other.

A. D. COOK, INC.
Lawrenceburg - Indiana

COOK Deep-Well Turbine Pumps

(*Continued from page 50*)

Lt. (j.g.) Claire Spealman, stationed at the Naval Medical Research Inst. at Bethesda, Md., has also developed equipment to reduce sea water to palatability. His equipment is reported to consist of four plastic packs and chemicals compressed to the sizes of cakes of soap. One small kit is designed to produce enough water for one man for 20 days.

Then, the United Press has reported that a Toronto war plant, collaborating with naval research men, has produced a device which turns salt into fresh water by freezing. The equipment is as yet too heavy for inclusion in anything but regulation lifeboats. The fresh water is produced in the form of an oblong piece of ice, and an attachment is provided for melting the ice in freezing weather.

The eleventh annual short course in water and sewage treatment was held by the Univ. of Florida General Extension Div. convened June 9–12 at the Hotel Alma, West Palm Beach. Co-operating were the Bur. of San. Eng. of the Florida State Board of Health, the Florida Section of the A.W.W.A. and the Florida Sewage Works Assn. Instructors were from the Univ. faculty, sanitary engineers and chemists of the State Board of Health, the U. S. Public Health Service, the Army and Navy, technical manufacturers' representatives and other specialists. Examination for water operators' licenses were given to all personnel meeting the qualification set up by the Florida Water Works Operators Assn.

"A Guide to the Prevention of Weight-Lifting Injuries" has been issued by the Bureau of Labor Standards, U.S. Dept. of Labor, Washington, D.C., from which it is available. The recommendations made by the pamphlet cover the fundamentals of safe lifting and conveying in all their phases—planning and control of processes and work methods, selection and training of workers assigned to heavy manual lifting and carrying, and the importance of careful and continuing supervision. The guide was compiled by safety experts, plant physicians and personnel officers, representing the U.S. Public Health Service, the Dept. of Labor, and industry.

(*Continued on page 54*)

PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

MABB'S

MABBS RAWHIDE PACKING

An Ideal Packing for Water Works and Sewage Pumps and Valves

MABBS HYDRAULIC PACKING COMPANY, *Inc. 1892*
431 S. Dearborn St., Chicago, Ill.

Get Water "On The Run"

FOR THIRSTY FACTORIES!

Water supply lines go in fast when you use ARMCO Spiral Welded Pipe. Long lengths, up to 50 feet, mean fewer joints, less assembly work. Hauling and handling are fast because this pipe is amply strong without being burdened by excess weight. Essential war-time jobs go ahead on an "all out" schedule.

Another advantage is that ARMCO Spiral Welded Pipe gives efficient, trouble-free service. Continued high flow capacity is assured by a smooth spun enamel lining that prevents tuberculation. Costly cleaning is out and pumping costs remain low. And especially important now, ARMCO "Spiral Welded" is shatterproof. Its ultimate strength is 50,000 to 60,000 lbs. per sq. in., and it will stretch 25 to 30 per cent before breaking.

ARMCO Pipe also is widely used *inside* plants for many varied industrial applications. Diameters run from 6 to 36 inches; wall thicknesses from 9/64 to ½-inch. You have a wide choice of coatings, joints and standard or special fittings. Write us for prices and shipping promises. The American Rolling Mill Co., Pipe Sales Div., Middletown, Ohio.

ARMCO

ARMCO SPIRAL WELDED PIPE

MEETS A.W.W.A. STANDARD SPECIFICATIONS

(*Continued from page 52*)

This bulletin is the third in a series dealing with important problems of working conditions and war production. "Controlling Absenteeism" describes devices that large war plants have developed to reduce job absences. "Safety Speeds Production" addresses supervisors on methods which foremen have used to increase output by decreasing accidents.

Builders Iron Foundry, Providence, R. I., has been cited for "continued and determined effort and patriotism" by Robert P. Patterson, Under-Secy. of War, and has received for a second time the Army and Navy production award for meritorious services.

Contributions to the war effort are listed in recent information from the Peerless Pump Div. Pumps were supplied for dewatering the ships that had been sealed under water or had had coffer dams built about them at Pearl Harbor. Pumps have been especially designed to handle high octane fuel and stockpile types of pumps have been readily adapted to the demands for getting reliable water supply for our troops in this Global War.

(*Continued on page 56*)

EDSON

DIAPHRAGM PUMPS

Hand Operated--sizes 2", 2½", 3", 4"
Power Operated--sizes 3" and 4"

Open Discharge or Force Pump
Skid, Truck or Trailer Mounted

COMPLETE PUMP OUTFITS

Edson Pumps - Suction Hose
Brass Couplings - Bronze Clamps
Red Seal Diaphragms
Brass Strainer or Foot Valve
Hose Spanners - Adapters - Etc.

Also—Brass Hydrant Pumps

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Main Office and Works: 49 D St., South Boston, Mass.

New York, 142 Ashland Pl., Brooklyn

IN BELL & SPIGOT WATER MAIN
Jointing Compound
You cannot beat
This Combination

1—**SULPHUR BASE**—Quick sealing of initial leakage.

2—**OLEFINE POLYSULPHIDE** Plasticizing Agent—Imparts much higher resistance to mechanical shock and to temperature changes.

3—**INGOT FORM**—Facilitates handling. Most convenient to ship and store.

4—**LIGHT WEIGHT**—1/5th that of lead—and this compound goes 3 times as far.

5—**AVAILABILITY**—Stocked at convenient points over the U. S.

Also—impervious to moisture and, mixed correctly at factory, cannot change composition en route to you. Give your next water main laying job the advantages (and sound economies) of

Tequl- MINERALEAD

For Jointing Bell & Spigot Main

THE ATLAS MINERAL PRODUCTS COMPANY of PA.

Mertztown • Pennsylvania

1879—ROSS—1879
AUTOMATIC VALVES

ALTITUDE VALVE

Controls elevation of water in tanks, basins and reservoirs

1. Single Acting
2. Double Acting

Maintains safe operating pressures for conduits, distribution and pump discharge

SURGE-RELIEF VALVE

REDUCING VALVE

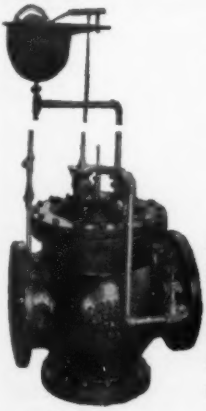
Maintains desired discharge pressure regardless of change in rate of flow

Regulates pressure in gravity and pump systems; between reservoirs and zones of different pressures, etc.

A self contained unit with three or more automatic controls

COMBINATION VALVE

Combination automatic control both directions through the valve.

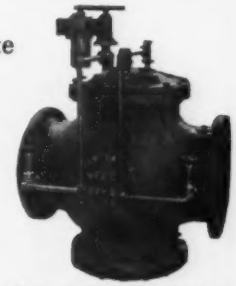


FLOAT VALVE

Maintains levels in tank, reservoir or basin

1. As direct acting
2. Pilot operated and with float traveling between two stops, for upper and lower limit of water elevation.

Electric remote control—solenoid or motor can be furnished



REMOTE CONTROL VALVE

Adapted for use as primary or secondary control on any of the hydraulically controlled or operated valves.

Packing Replacements for all Ross Valves Through Top of Valve

ROSS VALVE MFG. CO., INC., P. O. BOX 593, TROY, N. Y.

(*Continued from page 54*)

"Adapting an Auxiliary Turbine for Higher Pressure" is a reprint now available from the De Laval Steam Turbine Co., Trenton, N. J. Concrete details of the application of the principles to a Detroit Edison Co. plant are given.

"Iron and Carbon Dioxide Removal" is the title of a new bulletin (# 252) issued by the American Well Works of Aurora, Ill., to describe the use of its American Ferrofilter for the removal of iron and manganese and accompanying carbon dioxide from water supplies. Specifications, sections, and many photographs of the Ferrofilter in operation are included.

Para-Plastic, a new substitute for the former Hot Poured Rubber Sealing Waterproof Compound, has been developed from non-critical materials (containing no rubber), while its sealing qualities conform fully to Federal Specifications SS–F–336 covering a hot poured sealing compound. It is reported to bond firmly with concrete, steel or wood and to perform as a joint or crevice sealer against infiltration of water or any other foreign matter. The manufacturers, Servicised Production Corp., 6051 W. 65th

(*Continued on page 58*)

MONITOR COVERS

For large meter pits Ford MONITOR Covers are ideal. They are made for 24", 30" and 36" tile, have a 20" lid opening and are 7" deep. Inner lid optional. All sizes have the Lifter Worm Lock. Catalog and further information on request.

FORD METER BOX CO.,
WABASH, IND.

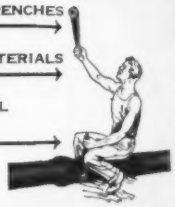
3 *Money, Time and Labor Saving Features of*

UNIVERSAL CAST IRON PIPE

LAID WITH ONLY WRENCHES

NO CAULKING MATERIALS

NO GASKETS. NO BELL HOLES TO DIG.



For water supply, fire protection systems, sewage disposal systems, industrial, and irrigation. Flexible.

Dept. C
THE CENTRAL FOUNDRY COMPANY
386 FOURTH AVENUE, NEW YORK 16, N. Y.

Gentlemen: Send us information and catalog on UNIVERSAL CAST IRON PIPE.

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STREET_____

CITY_____

BEST DRESSED MEN IN THE WORLD

FIGHTING for you — for America — with the finest equipment and materials America can give them. That includes both equipment you see and equipment you don't see.

Take sanitation materials, for instance. Mathieson HTH is going out in great quantities to help assure our troops of pure drinking water — overseas — on shipboard — in training camps.

Take their uniforms—and blankets, tents and parachutes. Millions of units of sturdy textiles are needed to equip our armed forces. Thousands of tons of chlorine are used in bleaching these materials — and that's where a big supply of Mathieson chlorine goes.

And their planes, tanks and munitions — the best that America can supply. Mathieson Chemicals fill many a vital need in their manufacture.

The War Production Board now controls distribution of calcium hypochlorite (Sanitation HTH), giving the armed forces first call on available supplies. We here at The Mathieson Alkali Works are doing our best to supply essential civilian needs, but the needs of the armed forces come first.

MATHIESON **Sanitation** **HTH**

THE MATHIESON ALKALI WORKS (INC.), 60 EAST 42nd STREET, NEW YORK, N. Y.

LIQUID CHLORINE...SANITATION HTH...HTH BLEACH...SODA ASH...CAUSTIC SODA...
BICARBONATE OF SODA...AMMONIA, ANHYDROUS and AQUA...PH-PLUS (FUSED ALKALI)
...DRY ICE...CARBONIC GAS...SYNTHETIC SALT CAKE...SODIUM CHLORITE PRODUCTS

(*Continued from page 56*)

St., Chicago, claim that it will extend to several times its original thickness and still maintain a perfect seal, and that it is not affected by ordinary extremes of summer or winter weather.

Forty-two miles of the 85-mile Delaware Aqueduct, New York City's new bomb-proof water line, have been put into operation two years ahead of schedule. The aqueduct is bomb-proof—it is a tunnel bored through solid rock at depths varying from several hundred to more than a thousand feet, but its original purpose was to relieve the recurrent water shortages in New York City. At present, the city's Croton and Kensico reservoirs are filled to over-flowing, and since November the city has not had to use its wells on Long Island to supplement its supply. However, the water now being brought in is immune from bombs and sabotage, thus protecting the city from drought in case of attacks on the vulnerable Croton and Catskill aqueducts, which are of "cut-and-cover" construction.

The new Delaware Aqueduct, the longest bomb-proof tunnel in the world, runs from the Rondout Reservoir, Lackawack, N.Y. (the Catskills) to New York City and links the Catskill and Croton watersheds and the Kensico Reservoir to the New York City Tunnel which was completed in 1936. When completed it will draw on the East Branch of the Delaware River. It is 18 ft. in diameter, concrete-lined, and operated by high-pressure pumps. It is costing $290,000,000.

Rondout Dam is still incomplete, as is the tunnel linking it to the Neversink Reservoir and another projected reservoir to the East Delaware Reservoir.

More than 58 workmen have been killed during excavation operations. Seepage from Rondout Creek worked through 600 ft. of grit and limestone into the tunnel, entering at a pressure equivalent to that of the sea at 700 ft. below the surface. Many new safety methods were devised to combat such conditions.

An "Index to A.S.T.M. Standards, Including Tentative Standards" has been issued as an adjunct to the 1942 "Book of Standards" by the American Society for Testing Materials. It facilitates rapid reference to any of the 1100 standard specifications and tests in the Book of Standards, and quickly indicates whether the A.S.T.M. has issued standard specifications, test methods, or definitions covering any particular engineering material or subject.

In addition to listings under appropriate key-wods, there is provided a convenient list of the specifications and tests in numeric sequence of their serial designations.

Copies of the 225-page Index are furnished without charge upon written request to the A.S.T.M. Headquarters, 260 South Broad St., Philadelphia.

NEWS OF THE FIELD

The "Committee on Water and Sewage Works Development," representing the concerted effort of the New England Water Works Association, The Federation of Sewage Works Associations, The American Water Works Association, and The Water and Sewage Works Manufacturers Association, is now organized to promote planning of water supply and sewerage works—primarily postwar, but also now—*if clearly needed* in support of the war effort.

Abel Wolman is general chairman of the activity which will headquarter for administrative purposes in the office of the American Water Works Association, 500 Fifth Avenue, New York 18, N.Y. E. L. Filby of Kansas City has been secured, on a leave-of-absence basis from his work in the Black and Veatch organization, to act as Field Director of the Development Committee work. His preliminary contacts will be through the conferences of water and sewage men scheduled from September through November.

The "Committee on Water and Sewage Works Development" has been organized to acquaint city officials and administrators in the field of water supply and sewerage with the broad ideas that: Every city in North America is entitled to have, and with good management, is able to pay for an adequate, safe and satisfactory water supply—and as a good neighbor to other cities, likewise, with good management, is able to dispose of its wastes in a manner that offends neither its own nor its neighbor's citizens.

A safe and satisfactory water supply is adequate for all domestic, commercial, and normal industrial needs. It is naturally also adequate for fire fighting purposes. It is not alone a safe drinking water, but should also be a pleasant tasting drinking water. In areas where the natural sources provide a hard water, it can be softened at an over-all economy in the production and end uses of the supply. In areas where the water is so soft that, without treatment, it is corrosive and destructive of mains and service pipes, correction of these conditions is practical—both technically and as a matter of economics.

An adequate sewerage system for a city contemplates not only a satisfactory collection system but also facilities for treatment and disposal. Such will neither menace the public health nor offend its own citizens or those of its neighbor community situated farther down the stream. Likewise, an industry that dumps its wastes into a water course without regard to the effects which may be caused by such procedure is not the sort of industry for a city or a region to welcome or to harbor. A "good neighbor" policy is international only in its broadest aspects. It begins in our own door-yards and shows itself best in the attitude that the modern city or modern industry adopts toward its neighbors.

For this work the Committee on Water and Sewage Works Development hopes to have the full support of every member of this Association.

(*Continued on page 2*)

(*Continued from page 1*)

Coal consumers are urged to order next winter's supply now as a safeguard against possible future shortages, by an appeal by Joseph B. Eastman, Director of the Office of Defense Transportation. The ODT Director has said the railroads could transport enough coal to meet prospective demands only if the fuel was kept moving steadily throughout the year, since there is not sufficient railroad equipment to provide a reserve for peak movements. His statement follows:

"Transportation of coal from mines to consumers is today more than ever an all-rail job. The railroads have lost much of the help they used to receive from coastwise colliers and some of the help they had from motor trucks. And the volume of coal required to meet war demands is substantially larger. The railroads cannot do this big transportation job unless the coal is kept moving over the rails week in and week out all through the year.

"There are not enough coal cars available, not enough locomotives, to provide a reserve for peak movements. Coal must be hauled in the warm spring and summer months as well as in the fall and winter months. If the movement slackens off in the non-heating season, the railroads will not be able to haul enough extra fuel next fall and winter to make up the difference, and suffering will result.

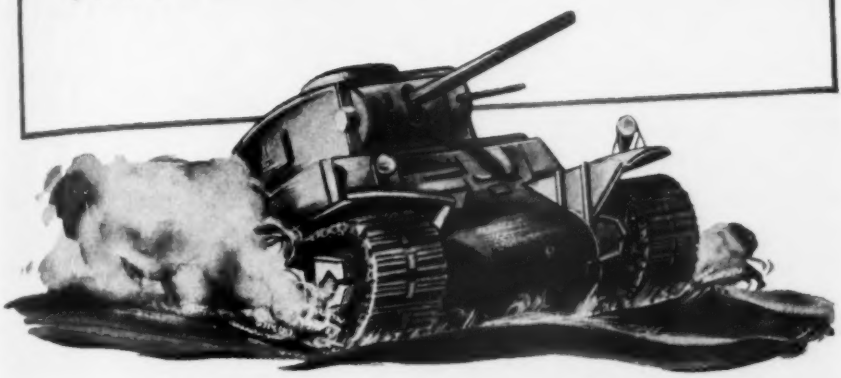
(*Continued on page 4*)

Robert Spurr Weston, Cons. Engr. of the firm of Weston & Sampson, Boston, died suddenly of a heart attack on July 30, at Larchwood Inn, Wakefield, R.I., where he had gone on physician's orders for a few days rest. He would have been 74 on August 1.

Born in Corcord, N.H., he received his education at Brockton High School and Amherst College, from which he was graduated in 1891. Included with his long career of consulting engineering were three years as Asst. Prof. of Public Health Eng. at Mass. Inst. of Tech. in 1913–16. He served as an expert witness in the Chicago Drainage Canal case and the Delaware River case. He was a co-author, along with Alfred Douglas Flinn and Clinton L. Bogert, of *Waterworks Handbook,* first published in 1916, with new editions in 1918 and 1927.

He had been a Member of the A.W.W.A. since 1898, was made an Honorary Member in 1930, and served as Director in 1936–38. He had served many professional organizations, including services as: Vice-Pres. of the Am. Inst. of Cons. Engrs., Am. Soc. Civ. Engrs., Am. Inst. of Chem. Engrs. and Am. Academy of Arts and Sciences; Pres. of Boston Soc. of Civ. Engrs., New England Water Works Assn., Am. Public Works Assn., Am. Chem. Soc., Am. Public Health Assn., and Eng. Inst. of Canada.

WHAT'S A 60-TON TANK got to do WITH STEEL PIPE?



Just this . . . The steel in ARMCO Spiral Welded Pipe that has served so well in water supply and force mains is needed on the fighting fronts. Now ARMCO Pipe is being used *only on vital war projects.*

Here of course it will have the same advantages that waterworks engineers approved for peacetime applications. A spun-enamel lining assures high flow capacity, prevents tuberculation and recurrent cleaning troubles. Fifty-foot lengths mean fewer joints, less assembly work. And ARMCO Steel Pipe has an ultimate strength of 50,000 to 60,000 pounds per square inch to guard against shattering and sudden breaks. Sizes range from 6 to 36 inches with wall thicknesses in any diameter to fit specific jobs.

Remember, if you can't get ARMCO Pipe now it is because the steel is going into tanks, trucks and ships for the fighting fronts—and Victory. After the war ARMCO Steel Pipe will be ready again to meet your every requirement. The American Rolling Mill Co., Pipe Sales Div., 171 Curtis St., Middletown, O.

ARMCO STEEL PIPE

MEETS A. W. W. A. STANDARD SPECIFICATIONS

(Continued from page 2)

"The way for consumers to safeguard themselves against hardship is to place their orders for next winter's coal supply now. By so doing they will help keep the coal moving and help avert the otherwise serious risk of grave shortages next winter."

Men discharged from the armed services because of disabilities, combat-incurred or otherwise, are being given every opportunity to stay in the war, not in the battle lines but on the production front, according to Paul V. McNutt, Chairman of the War Manpower Commission. He has announced that the hospital service of the Veterans Employment Division of the United States Employment Service is now operating in 309 army and navy hospitals. The service provides the veterans with a direct contact with the Veterans Employment representative in their home towns, their first step on the way back to a civilian job.

The representative assigned to a hospital interviews the soldier or sailor about to be discharged and discusses with him his possibilities for employment. The veteran is informed of his re-employment rights under the Selective Service Act. He is placed in contact, if desirable, with the training facilities of the Veterans Administration—if the disability is service connected—and the U.S. Office of Education.

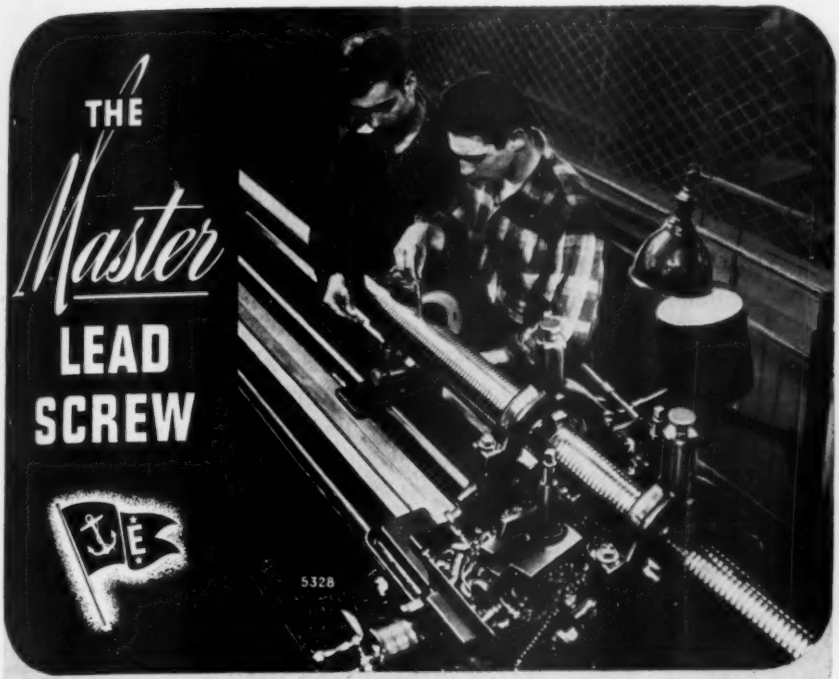
"The veteran of this war is still young," according to Chairman McNutt. "Except in rare cases, his disabilities are not sufficiently serious to prevent him from enjoying a normal life. Furthermore, these veterans constitute an important source of labor supply."

(Continued on page 6)

George H. Gibson, Engr. and inventor and founder of the technical advertising agency bearing his name, died on July 28 at the age of 67, at his home at Montclair, N.J.

He was born in Wayne County, Mich., and after being graduated from the Univ. of Michigan in 1901 he began his engineering career with the Westinghouse Electric & Mfg. Co. He soon became an associate of the publishing department of Westinghouse industries. He was later associated with the B. F. Sturtevant Co. as Adv. Mgr. and with the International Steam Pump Co. as Mgr. of Publicity. He formed the George H. Gibson Adv. Co. in 1905.

Listed among his inventions are: the Hi-Speed fan, the Primary battery, the Cochrane chemical proportioner and Cochrane generator, the Leeds & Northrup combustion control, and the vapor-power perpetual motion machine which was exhibited at the Chicago Exposition and the Smithsonian Inst. He was a member of the Am. Soc. Mech. Engrs.



Making a Precision Lead Screw

The lead screws used in the gear generating machines which produce De Laval Helical Gears for transmitting the power of high-speed steam turbines and also in the thread milling machines on which the worms for De Laval worm gears are made must be extremely accurate, since tolerances are measured in ten-thousandths of an inch.

Lead screws of the precision required not being generally available, it has from the beginning been the practice of the De Laval Steam Turbine Company to cut its own lead screws. The precision lead screw cutting lathe here shown, after exhaustive checking and the incorporation of certain refinements by our engineers and shop specialists, produces lead screws of the necessary accuracy.

The machine's own carefully corrected original or master lead screw is protected and carefully preserved. A duplicate which has been cut from the original and can readily be replaced when worn or injured is used in regular operation.

This is one of the factors contributing to the outstanding success of the many millions of horsepower of De Laval Gears now in service upon American Naval and merchant vessels and in industrial applications.

M-35

De Laval STEAM TURBINE CO.
TRENTON 2, N.J.

MANUFACTURERS OF TURBINES: STEAM, HYDRAULIC; PUMPS: CENTRIFUGAL, CLOGLESS, ROTARY DISPLACEMENT, MOTOR-MOUNTED, MIXED-FLOW, PROPELLER; PRIMING SYSTEMS; CENTRIFUGAL BLOWERS and COMPRESSORS; GEARS: WORM, HELICAL and FLEXIBLE COUPLINGS

(*Continued from page 4*)

The Veterans Employment Service has found that the majority of discharged veterans are anxious to obtain jobs in war production. They are reluctant to drop out of the war picture entirely and insist upon an opportunity for further service. This feeling is reported increasingly apparent, particularly in cases where the physical disability was the result of combat injuries.

Mr. McNutt said employers are eager to obtain the services of veterans as morale builders, especially in war production plants. The Veterans Employment Service, however, is insistent that the jobs be something beyond that. The program is designed to place the veteran in a job that will be permanent and one that offers him the opportunity to resume a normal life.

Substitute Cranford for Crawford (both William H.) in your list of A.W.W.A. members in military service. William H. Crawford, cited on p. 31 of the July JOURNAL News of the Field, continues with the Philadelphia Bureau of Water; whereas William H. Cranford has left the position of Supt. of Water Plant, Rock Hill Printing & Finishing Co., Rock Hill, S.C., to serve as 1st Lt., and is now at Fort Bliss, Texas.

(*Continued on page 8*)

25,000 TONS OF METAL

SAVED

on only 4 jobs!

On only four tailor-made large diameter pipe jobs, more than 25,000 tons less iron were used than would have been necessary under other methods of design and manufacture of cast iron pipe. This saving resulted from specifying Mono-Cast Centrifugal Cast Iron Pipe in 16-ft. lengths, made in accordance with the A.S.A. Law of Design. In addition to this important saving in metal, 7,256 fewer joints were required with 16-ft. lengths, resulting in a large saving of labor and material. Three hundred fewer tons of joint materials were needed in making up the joints. Because of the high physical qualities of Mono-Cast Pipe, there was no sacrifice of strength or safety.

Such savings are important in both war and peace

AMERICAN CAST IRON PIPE COMPANY

BIRMINGHAM 2, ALABAMA

Sales Offices in Principal Cities

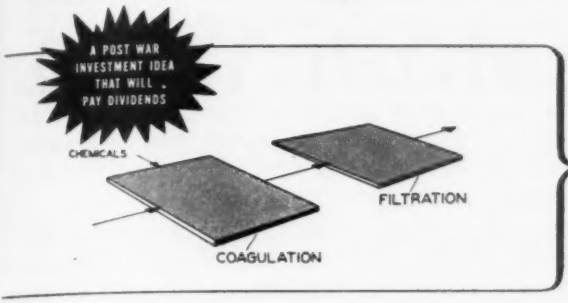
SAVE MONEY USE ACTIVATED ALUM and BLACKALUM

STUART-BRUMLEY CORP.

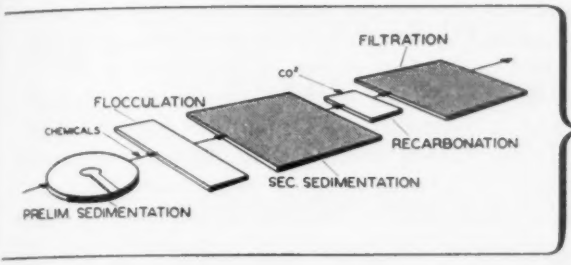
516 North Charles St.

Baltimore Maryland

Need Softer Water?



1926
Coagulation—at 2.33¢ per thousand gallons treated



1943
Softening—at 2.32¢ per thousand gallons treated

HERE'S HOW ONE TOWN MODERNIZED WITH DORR EQUIPMENT—AND SAVED!

BACK in 1926, the Filtration plant of Bismarck, North Dakota consisted of coagulation in a plain basin prior to filtration. At that time, treatment seemed adequate and the cost of 2.33¢ per thousand gallons reasonable. In time, however, increased pumpage due to a growing population made expansion necessary—and a Dorr Clarifier and Dorrco Flocculator were added ahead of the settling basin. Later still the application of lime slaking, soda ash and recarbonation effected even more complete softening.

Today, the softening plant resulting from these changes actually produces a soft water at a cost of 2.32¢ per thousand gallons treated—and saves the 16,000 inhabitants of Bismarck an estimated $8,000 yearly in soap as well. Bismarck's changeover is only one of the many instances where Dorr equipment has been the key to better water and actual dollar savings. If you are considering expanding your present plant, we would be glad to help you.

Now is the time to plan for tomorrow.

THE DORR COMPANY

ENGINEERS ▪ 570 LEXINGTON AVE. ▪ NEW YORK

Atlanta Toronto Chicago Denver Los Angeles

(*Continued from page 6*)

John Watson Alvord, pioneer Chicago engineer and senior member in the engineering firm, Alvord, Burdick & Howson, Chicago, died after a brief illness at his summer home at Douglas, Mich, on July 31, at the age of 82. He was one of the last of the City Engineers who designed the public improvements for the large suburban areas which now constitute a substantial part of Chicago, including Lake View on the north, the old town of Cicero on the west, still partly suburban, and Hyde Park on the south where he gained his first experience as an assistant.

Following the annexation of these areas to Chicago in the late 80's, he organized and conducted the surveys for the Worlds Columbian Exposition under the late Daniel H. Burnham, Director of Works, which co-ordinated and located the great number of building operations that made the world famous "White City." He served throughout this undertaking and assisted in the final report on this great work. In 1894, he entered private practice as a consulting engineer with headquarters at Chicago and in co-operation with partners has served upward of 300 municipalities widely scattered throughout the United States in matters particularly relating to public water supply and sewerage, including many treatment plants for water and sewage in which he was one of the pioneers. He was largely concerned with the finances of water supply and the valuation of water works properties and was frequently employed as a member of appraisal boards.

He served Chicago as a member of the Merriam Commission in 1910. He was a member of the Flood Commission for Dayton, Ohio, which outlined the works for the protection of that city after the great flood of 1913; member of the Citizens Terminal Plan Commission for Chicago in 1914; member of the State Board of Natural Resources and Conservation from 1918 until recently. During the previous World War, he was Supervising Engr. at Camp Grant, Ill., and through co-operation with his partners engineered several other cantonments. He was also Chief Engr., U.S. Housing Corp., 1917 to 1919.

Mr. Alvord was a Past President and honorary member of the A.W.W.A.; honorary member, Am. Soc. Civ. Engrs.; Past President and honorary member, Western Soc. Engrs.; member, Am. Inst. Cons. Engrs.; member, Inst. Civ. Engrs., Great Britain; and fellow in the Am. Assn. Advancement of Science. The honorary degree of Civil Engineer was conferred on him in 1913 by the Univ. of Wisconsin.

He was a member of the Union League Club, the Chicago Engineers Club, and the University Club of Winter Park, Florida, where he has maintained his winter home for several years. In 1916, he founded and endowed the Washington Award for pre-eminent services in promoting the public welfare, administered by the Western Soc. Engrs., which is annually conferred upon a worthy engineer.

(*Continued on page 10*)

CAST IRON PIPE

Manufactured in Sizes 2" to 96"—
A large stock constantly on hand,
facilitating prompt shipment.

Flanged Pipe

Special Castings

Flexible Joint Pipe

Bell and Spigot Pipe

Warren Spun Centrifugally Cast Iron Pipe

Short Body B. & S. Specials

WF

Warren Foundry & Pipe Corp.

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75 FEDERAL ST., BOSTON, MASS.

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PHILLIPSBURG, N. J.
EVERETT, MASS.

(*Continued from page 8*)

J. B. C. Muddiman, formerly Chief Chem. of the Kingston, N.Y., Water Dept., and Cons. San. Chem. for the Catskill, N.Y., Water Board, was appointed 1st Lt. in the U.S. Army early in July and assigned to the Medical Replacement Pool at Camp Pickett, Va., to await attachment to a unit.

Raymond T. Reilly, formerly of the staff of Whitman, Requardt & Smith, is now General Mgr. of the Conley Frog and Switch Co., Memphis, Tenn. Conley manufactures railroad track materials, forgings, etc. Mr. Reilly's last duties with Whitman, Requardt & Smith were as Chief San. Eng. on War Dept. projects at Huntsville, Ala., and Denver, Col.

G. Gale Dixon, of Parsons, Brinkerhoff, Hogan & Macdonald, recently returned from an eight months' stay in South America, where he had been engaged on matters relating to water supply and power for the firm's Itabira Iron Mines, Railroad and Port Project in Brazil, and on preliminary work on a complete water supply system for the City of Asuncion, Capital of Paraguay.

(*Continued on page 12*)

McWANE
CAST IRON PIPE

ALL SIZES
1¼" thru 12"
• PRECALKED
• BELL & SPIGOT
• THREADED

Immediate Shipments

McWANE CAST IRON PIPE CO.
Birmingham, Alabama

NO MORE RUST
Will Form Inside Your Steel Tanks If You Use
"RUSTOP"

STOPS CORROSION—Immediately, Permanently, and **ECONOMICALLY.** No Sandblasting, Scraping or Painting. Many Types of Special Applications.

Write immediately for complete data and quotations—No obligation.

THE APPROVED METHOD

RUSTOP
THE CATHODIC SYSTEM OF CORROSION PREVENTION

ELECTRO RUST-PROOFING CO.
DAYTON • OHIO

Continuous Feed

"SEE-THRU" HEAD

Made of transparent plastic . . . not affected by water works chemicals . . . this moulded head with twin sight feed domes allows you to see action of check valves. Patented, moulded, dished diaphragm, fabric reinforced, is of ample size for reasonable stroking rates which extend the life of all moving parts.

DOSAGE CALCULATOR

The time-saving "Dosage Calculator" permanently attached to the Chem-O-Feeder tells how to make up solutions . . . how to set feeder for proper stroke length and stroking rate. It gives all this information at a glance for several dosages and many pumping rates.

FEED SELECTION KNOB & STROKE LENGTH INDICATOR

To control the chemical feeding rate . . . even while operating . . . turn the Selector Knob: the plastic covered stroke length indicator dial shows clearly the volume of chemical solution fed.

Send for Bulletin SAN-2

Learn about the many exclusive features of this new Heavy Duty Chem-O-Feeder

% PROPORTIONEERS, INC. %

"Chemical Feeder Headquarters"

61 CODDING ST., PROVIDENCE, R. I.

(*Continued from page 10*)

Robert L. Streeter, former City & County Engr., Gillette, Wyo., is now associated with Crocker and Ryan, Cons. Engrs., Denver, Col., on various war construction projects. He has worked variously as Designing Engr. and Project Mgr. on such projects as the Air Corps Clerical School, Fort Logan, Peterson Field, Col., Pueblo Ordnance Depot, and two war housing projects at Sydney, Neb. He is at present Project Mgr. on additions to the water supply and sewage disposal system at Camp Carson, a $300,000 project, and on construction of headquarters for the Second Air Force at Colorado Springs, Col., where $1,000,000 is being spent.

Mr. Streeter is past Vice-Chairman of the Rocky Mt. Section of the A.W.W.A.

Lt. Vernon L. Walker is now stationed at Camp Grant, Ill., as Asst. Medical Inspector. Formerly Sen. San. Engr. with the Illinois State Health Dept., he was commissioned in the Sanitary Corps in January 1943 and trained at the Medical Field Service School, Carlisle Barracks, Pa. He was in the Sanitary Branch of the Surgeon General's Office, Washington, D.C., before assignment to Camp Grant.

Henry C. Burgess, former Chem. Engr. located at 35 E. Wacker Drive, Chicago, is now Lt. (j.g.) U.S.N.R., presently assigned to the Mass. Inst. Tech. Naval Training School (Radar). Previously, after reporting for active duty in December 1942, he was located at the Washington Navy Yard.

(*Continued on page 14*)

Max H. Doyne, Director of Public Utilities, St. Louis, was one of ten killed in a glider crash during the first public demonstration there of a troop-carrying air auxiliary. He had attended the A.W.W.A. Convention at Toronto in 1941 and had been an Active Member since then.

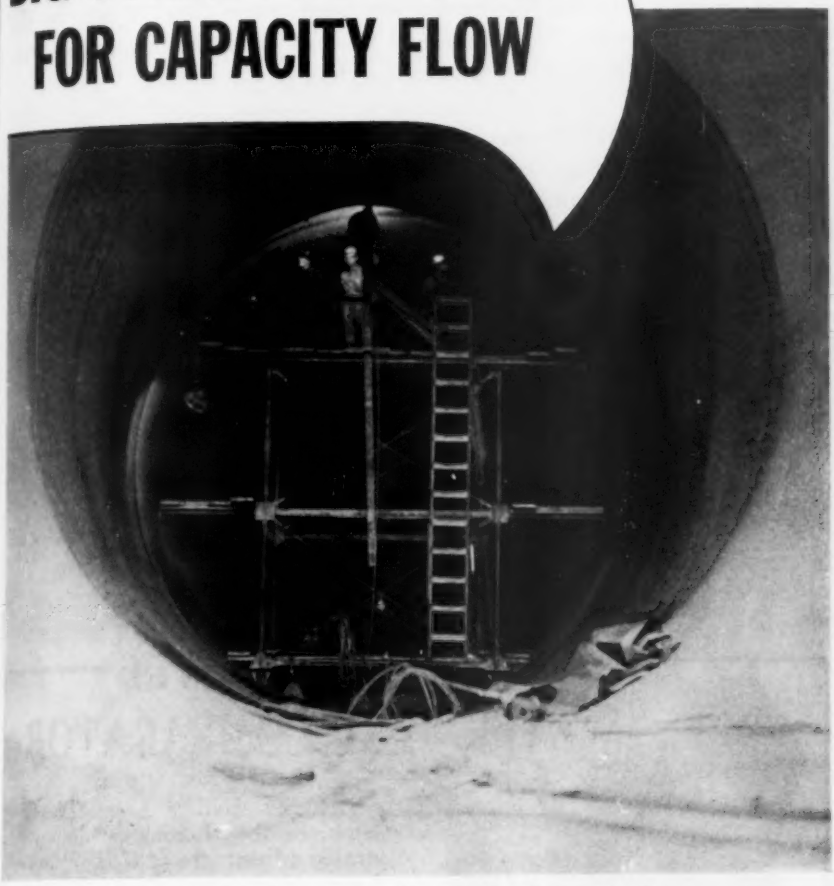
ZECO GREENSAND ZEOLITE

Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

ZEOLITE CHEMICAL CO.
90 WEST STREET **NEW YORK, N. Y.**

BIG SCALE PROTECTION FOR CAPACITY FLOW



Parker Dam, U. S. Bureau of Reclamation. Barrett Enamel

● To maintain a high coefficient of flow, this tremendous underground water artery has been lined with Barrett Waterworks Enamel. Engineers know from experience that this superior product provides a uniform, electrically-resistant coating with a hard, smooth finish and with a low water absorption factor. It is not only inexpensive and easy to apply, but decreases the subsequent need for replacement and repair.

Barrett Waterworks Enamel meets the standard specifications of the American Water Works Association. It is made from coal-tar pitch —the most stable bituminous material known for underground pipe protection.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK

FIELD SERVICE—The Barrett Waterworks Service Department and staff of Field Service men stand ready to provide a broad measure of cooperation. Services available include consultation on technical details, training of crews, and job inspection.

Barrett WATERWORKS ENAMEL

(*Continued from page 12*)

Enrique S. Lilue, formerly Asst. Director of the Federal Dist. Water Works, Caracas, Venezuela, has been made Chief Engr. of the Pump and Machinery Dept., National Inst. of Sanitation (Instituto Nacional de Obras Sanitarias) with headquarters at Caracas.

Gordon E. McCallum, U.S.P.H.S. San. Engr. and Acting Chief of the OCD San. Eng. Sec., has been designated Chief San. Engr. in charge of the OCD San. Eng. Sec.

George Glasgow, formerly Water Chemist at South Williamsport, Pa., has been transferred to the Naugatuck Chemical Div. of the U.S. Rubber Co. where he is Research Chem. Engr.

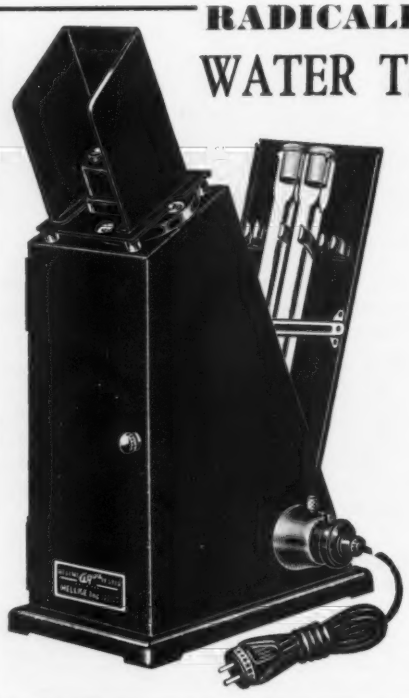
A. Muriel Mazac, new to the A.W.W.A.'s growing list of women members, is Director of the Chemical Dept. for the Klett Mfg. Co., New York, also new A.W.W.A. members in the Associate Member category.

Miss Mazac's experience is wide despite a short range of years. In 1938, she was graduated from a pre-medical course at Good Counsel Col-

(*Continued on page 16*)

RADICALLY IMPROVED

WATER TEST COMPARATOR



The new Hellige Aqua Tester combines the thoroughly demonstrated advantages of Hellige *nonfading glass color standards* with radical improvements in design. This new model is, we believe, the most advanced type ever brought on the market and demands special consideration as it brings to its user the utmost in permanent reliability, accuracy, convenience and, last but not least, economy. Standards for all popular A. P. H. A. and A. W. W. A. Methods and Hydrogen Ion Control are available.

Write for Bulletin No. 602.

HELLIGE

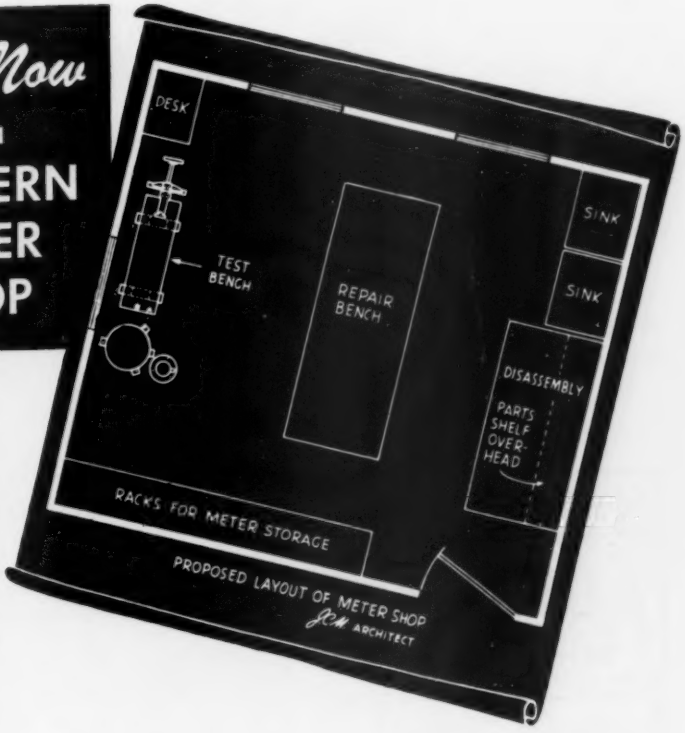
INCORPORATED

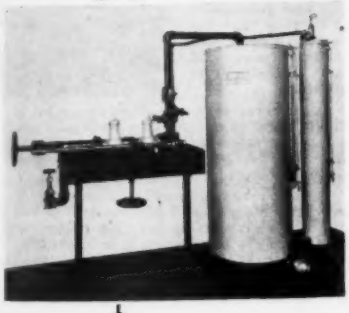
3718 NORTHERN BLVD. LONG ISLAND CITY, N.Y.

A GOOD meter repair man will do better work when he has good tools and a well planned place in which to work.

That is why your post-war planning should include your meter shop. It is not too early to look into the modernization of testing equipment. The layout of the shop is also important. The proper arrangement of the necessary work benches, parts, bins, testing bench, etc. will enable the meter man to do a better job. An efficient meter shop need not be elaborate nor expensive . . . but remember that it is the heart of the metering end of your water system; and it will pay you to plan it carefully.

Plan Now
for a
MODERN
METER
SHOP





● *Neptune representatives have first-hand knowledge of methods used in water departments of all sizes and will be glad to help with your plans.*

65

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Neptune Meters, Ltd., Long Branch, Ont., Canada

(*Continued from page 14*)

lege, with a B.S. degree. In the same year she obtained a State Teacher's License permitting her to teach biology and chemistry. Next she went to the St. Agnes Hospital Laboratory, where she was employed as a laboratory technician for 3 years, specializing in blood chemistry and research in the field of sulfa drugs, vitamins and blood plasma. In 1941–42, she was Director of a laboratory maintained by three physicians primarily interested in arthritic and cardiac diseases. She also received, for work done in 1941–42, diplomas from the Sanborn Co., Cambridge, Mass., for metabolism and electrocardiograph courses.

In 1942 she joined the Klett Mfg. Co., where her work entails the preparation and standardization of reagents for the purpose of supplying the bio-chemical and chemical laboratory with highly standardized reagents and solutions which are necessary in modern colorimetric analysis. She is also studying for a master's degree with courses in advanced bacteriology and parasitology at the Columbia Univ. College of Pharmacy.

The 4th Annual Water Conference of the Engineers' Society of Western Pennsylvania will be held in the William Penn Hotel, Pittsburgh, November 1 and 2, 1943.

(*Continued on page 18*)

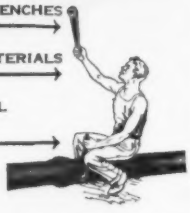
3 *Money, Time and Labor Saving Features of*

UNIVERSAL CAST IRON PIPE

LAID WITH ONLY WRENCHES

NO CAULKING MATERIALS

NO GASKETS. NO BELL HOLES TO DIG.



For water supply, fire protection systems, sewage disposal systems, industrial, and irrigation. Flexible.

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Prevent Rusting

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Initial cost of a complete equipment is about equal to the cost of a good paint job. . . . Operation costs only about 2 mills (i. e. $0.002) per year per square foot of surface protected.

If your tanks and steel structures are not now protected by this proven low-cost method, they should be. No obligation. Send for fully descriptive literature today.

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Division of
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A good water supply—soft, clear, iron-free—makes any city a better place to live, makes every citizen healthier, happier, proud of his community. Hundreds of modern municipalities have found this out after installing Permutit * water conditioning equipment. Right now Permutit's big job is conditioning the water for Army camps and Naval bases, shipbuilding and Navy yards and war plants. But after the war Permutit equipment—more practical and economical than ever—will again be available for your city. Be ready—write now for details to The Permutit Company, Dept. G3, 330 West 42nd Street, New York 18, N. Y. In Canada: Permutit Company of Canada, Ltd., Montreal. * Trademark Reg. U. S. Pat. Off.

PERMUTIT

WATER CONDITIONING HEADQUARTERS

(*Continued from page 16*)

The North Dakota Water and Sewage Conference has set its 15th Annual Convention dates for October 5–7, with the meeting to be held in Grand Forks with headquarters at the Ryan Hotel. R. M. Jensen, Water Works Supt. at Grand Forks, is the Local Com. Chairman. K. C. Lauster is Secy.-Treas. of the Conference.

The 1944 Annual Meeting of the National Fire Protection Assn. is planned for Philadelphia, May 8–11, according to action of the N.F.P.A. Board of Directors in meeting on June 28. The Program Committee consists of the Pres., Chairman of the Board, and the Gen. Mgr.

"Poet and Industrialist" (not to mention water works man) is the heading for a recent interview in the Newark, N.J., *Star Ledger* column, "Names and Faces in the News." The occasion was the institution of a voluntary 48-hr. week in three New Jersey counties adjacent to Newark, and the man was William J. Orchard, who gave impetus and follow-through to the voluntary program which is solving the local manpower problem. The column goes on:

"While playing his part in the winning of the Army-Navy "E" and star for his plant and helping pile up $4,000,000 in war bonds during 1942 as chairman of the Maplewood Citizens' War Savings Committee, Orchard wrote two war songs, "On Your Way, U.S.A." which was used in the war bond campaign and "The Boy Depends on Me," which has something to do with three young Orchards who are serving their country in uniform.

"One of Orchard's sons, William, is a captain in the Air Corps stationed at Camp Maxey, Texas. He holds the air medal for observation flights over the Atlantic Ocean. Another, Robert, is a second-class aviation machinist's mate, now an instructor in Chicago. A daughter, Sally, a first lieutenant in the WAC, is commander of the First Regiment at Fort Des Moines, Iowa, and is among the youngest commissioned officers in the women's army. The oldest son, John, is manager of a Kaiser shipyard

(*Continued on page 20*)

Arthur Boniface, Village Engr. of Scarsdale, N.Y., for the past 21 years, died July 18 after a long illness. He was Village Mgr. as well for the last two years, and after he fell ill, he had drawn up a postwar plan for the town.

Mr. Boniface was a native of Hastings, Eng., and received his engineering education in British naval schools. He came here in 1901, and for many years was engaged in construction work. In 1914 he had charge of the construction of the Battery Park section of the Seventh Avenue subway.

Mr. Boniface, who was a member of the A.W.W.A., was 64.

HYDRO-TITE

AND DRY BRAIDED FIBREX

A DEPENDABLE SELF-CAULKING JOINT COMPOUND FOR CAST IRON BELL AND SPIGOT WATER MAINS

HYDRO-TITE is a self-caulking sulphur base jointing compound used to joint bell and spigot cast iron water mains and soil pipe. It comes in powder form which insures uniformity and quick melting.

When poured into a joint, HYDRO-TITE immediately solidifies upon contact with the metal and bonds to both the surfaces of the bell and the spigot for the entire depth of the joint. It requires no caulking and after pouring a joint, water pressure may be immediately applied.

HYDRO-TITE is easy to use, no skill being required to make joints that are tight from the start. Joints made with HYDRO-TITE will stand any pressure the pipe will stand.

DRY BRAIDED FIBREX

USED LIKE BRAIDED JUTE
WILL NOT BREED BACTERIA

A SANITARY Packing used in jointing bell and spigot pipe for water, sewer mains and soil pipe.

FIBREX was designed for use with Hydro-Tite and other self-caulking compounds, but is entirely suitable also for joints made with lead, and for Sani-Tite and other asphalt sewer joint compounds. Thousands of pounds of Fibrex are already in service on water lines throughout the country.

HYDRAULIC DEVELOPMENT CORPORATION

Main Sales Office: 50 CHURCH STREET, NEW YORK, N. Y.

Works: WEST MEDFORD STATION, BOSTON, MASS.

(*Continued from page 18*)

in California and a daughter, Jane, a chemistry student at Sarah Lawrence College, does work in the chemical laboratories of her father's plant. Mother Orchard is secretary to the women's branch of the Montclair Committee for Servicemen.

"Although his writing is largely restricted to letters to Orchards in various parts of the country these days, the industrialist published a volume of verse, 'Thoughts in Rhyme,' several years before Pearl Harbor."

A.W.W.A. members have been treated to "Bill" Orchard's versifying at annual conventions, where he has functioned as Convention Management Committee Chairman. He was made an Honorary Member in 1937 and is an A.W.W.A. Director representing the Water and Sewage Works Mfrs. Assn. He is Gen. Mgr. of Wallace and Tiernan Co., Inc.

"Letter Symbols for Heat and Thermodynamics Including Heat Flow" is an American Standard approved in June 1943, by the American Standards Assn., 29 West 39th St., New York, N.Y., from whom copies are available. This 20-page document is numbered Z10.4–1943. This is another of the valuable standards being prepared by the ASA

(*Continued on page 22*)

Dependable

A WAR TIME LESSON

Scattered country wide, Kupferle Fire Hydrants, some fifty years old, are giving trouble free service. Kupferle dependability is emphasized in war time—but is always important.

JOHN C. KUPFERLE FOUNDRY CO.
St. Louis

KUPFERLE
FIRE HYDRANTS

For
PERMANENTLY TIGHT, TROUBLE-FREE BELL & SPIGOT WATER MAIN JOINTING
plus Extra Economy and Convenience

Tegul- MINERALEAD

10 LB. INGOTS—impervious to moisture, easy to store and handle.
CANNOT CHANGE its chemical composition.
WEIGHS ONLY 1/5th as much as lead; goes 3 times as far.
NEEDS NO SKILLED LABOR or deep bell holes.
GREATER BONDING STRENGTH to metallic and ceramic surfaces, and much higher resistance to mechanical and thermal shock, because it contains an olefine polysulphide.
LOWER INITIAL LEAKAGE and faster tight sealing.

For more information, write
THE ATLAS MINERAL PRODUCTS COMPANY of PA.
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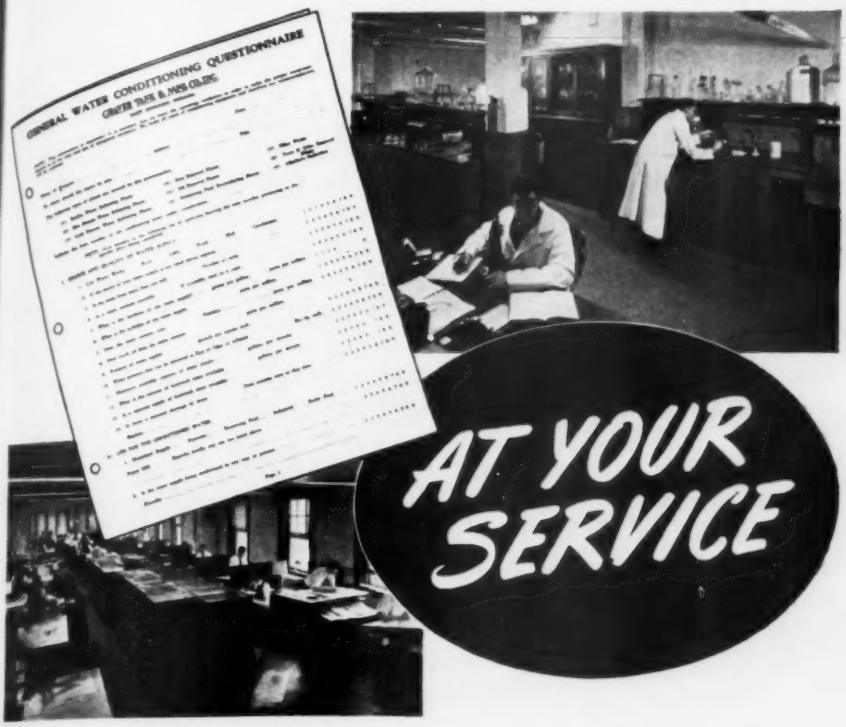


. . . Our Experience and Laboratory Facilities

Is your water conditioning equipment delivering the quality of water you must have?

Is its capacity sufficient for your requirements?

Are you satisfied with its operating cost . . . its efficiency?

If you are confronted with any such problems, or if you are planning the installation of additional equipment for any phase of water conditioning, we shall be glad to give you the benefit of our more than thirty years of experience without obligation.

We have prepared an exceptionally complete and comprehensive questionnaire which will enable you to give us full information about your present equipment and your requirements. This information, together with a sample of the water to be treated, will enable us to analyze your problem and submit unbiased recommendations.

Write today for a copy of this special questionnaire. There's no cost or obligation.

GRAVER TANK & MFG. CO. INC.
4809-45 Tod Ave. East Chicago, Ind.
NEW YORK — CATASAUQUA, PA. — CHICAGO — TULSA

GRAVER *Water Conditioning Equipment*

43-34-W

(*Continued from page 20*)

Sectional Committee on Letter Symbols and Abbreviations for Science and Engineering.

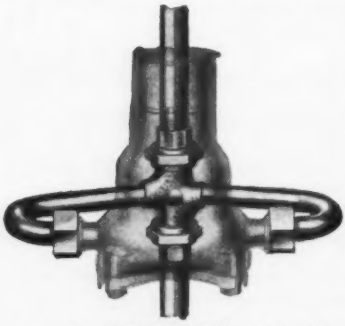
"Electronics at Work" is 44-page booklet B–3246 available from Dept. 7–N–20, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

James G. Walker is the recently appointed Mgr. of the Transite Asbestos Pipe Dept. for the New York Sales Dist. of Johns-Manville. A native of Lowell, Mass., he obtained his technical training in 2 years at Holy Cross Univ. and 4 years at Mass. Inst. Tech., where he specialized in architectural engineering. He served with the Portland Cement Assn. and the Alpha Portland Cement Co. before joining Johns-Manville.

To handle valve repairs, the Farris Eng. Co. has established a new division, with headquarters with the Company at Ridgefield, N.J. The Company reports the division as manned by skilled mechanics engaged in the actual manufacturing of valves, and fully equipped to recondition and reconstruct all types of reducing, relief, and standard or special valves and control apparatus.

(*Continued on page 34*)

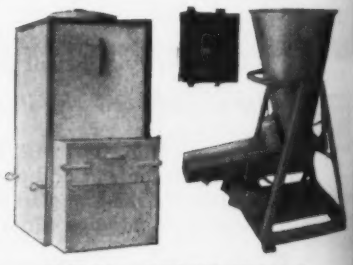
FORGET ME NOT!



I am the COPPERHORN, out for the duration because of the Copper Conservation Order.—BUT I am the best fitting for a basement water meter setting that has been devised to date. Learn more about me and when you plan on your future meter installations, FORGET ME NOT!

FORD METER BOX CO.,
WABASH, IND.

SYNTRON



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Give YOU
Rheostat Control of Feed—
Vibrated Supply Hoppers—
No Moving, Wearing Parts—
Low Initial and Operating Costs

Write us about your Dry Chemical Feeding Problem

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CLEAN
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REPAIR

A NECESSARY WARTIME PRESCRIPTION, ASSURING CONTINUED BEST SERVICE FROM YOUR

Elevated Steel Tanks

by-

PITTSBURGH
•DES MOINES

Check your tank's condition regularly—inside and out, have your local riggers and painters keep maintenance up to the mark—and your present tank will see you through!

For paint specifications and detailed recommendations, write—without obligation.

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NEW YORK, ROOM 921, 270 BROADWAY . . . CHICAGO, 1228 FIRST NATIONAL BANK BUILDING

DALLAS, 1229 PRAETORIAN BUILDING . . . SAN FRANCISCO, 631 RIALTO BUILDING

SEATTLE, 1132 EIGHTH AVENUE, SOUTH

(*Continued from page 22*)

Many water works executives have had complaints of efflorescence of brick and similar buildings laid to water supply. Showing water as only a minor factor is the abstract reprinted below, from "Function of Carbon Dioxide in Producing Effloresense on Plaster and Cement Products" by Dana L. Bishop, from Jour. Research, Nat'l Bur. Standards, **30**: 361 (1943).

"Hydrated magnesium sulfate was identified as the principal compound in efflorescence on white-coat plaster finish. This salt is not a constituent of the white-coat backing but is formed by reactions involving gypsum and magnesia in the plaster, carbon dioxide from the air, and water. The reaction to form magnesium sulfate cannot take place until after the $Ca(OH)_2$ has been changed to $CaCO_3$. Magnesium sulfate efflorescence may also be formed on cement products by the same reactions."

Ample water supply for a dozen war plant communities along the northern rim of Detroit is reported assured this summer as the result of the combined efforts of WPB's Office of War Utilities, the Federal Works Agency and other federal and municipal agencies.

Installed in record time, one or two of four pumps of 40-mgd. capacity were scheduled to go into operation in mid-July, followed at short intervals by the remaining pumps. Nearly 100 war industries, including Chrysler Tank, General Motors Diesel, Vickers, Hudson Naval Ordnance, Briggs, Republic Steel, Allegheny Ludlum Steel, and many key parts plants, are located in the area to be served by these pumps. Many large war housing projects are also there. The additional water service removes the threat of interruptions in operations of these war plants as well as the fire hazard to plants and homes alike.

A survey made by the Office of War Utilities earlier this year disclosed that the water requirements of these war plant communities had become so heavy that critical water conditions faced them this summer if they were forced to rely on their present facilities. The difficulty was lack of pressure rather than an inadequate water supply at the source.

The OWU determined that it was impractical to lay sufficiently large pipes to serve these communities but hit upon another solution. Located in Highland Park, a suburb within Detroit but much closer to the war plant communities than the main Detroit pumping stations, was a 40-mil.gal.

(*Continued on page 36*)

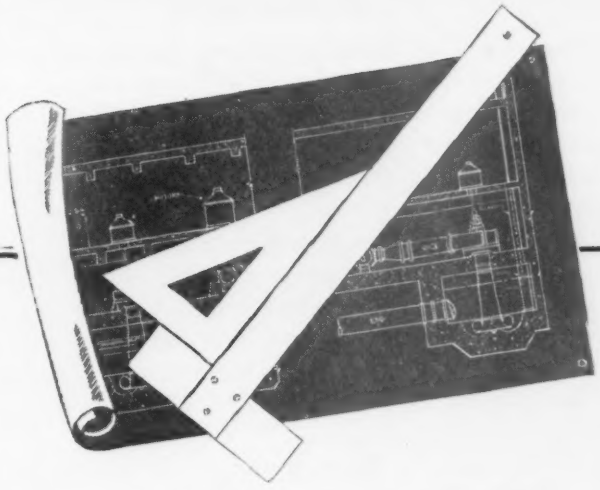
COOK Well Strainers

A reciprocal relation, the life and functioning of the one depending much on the other.

A. D. COOK, INC.

Lawrenceburg - Indiana

COOK Deep-Well Turbine Pumps



LET US HELP YOU WITH YOUR POST WAR PLANNING

BUILDERS WATER AND SEWAGE WORKS Equipment

Victory will bring unusual opportunities for water works and sewage treatment plants if plans are complete and ready. We shall be pleased to recommend adaptations of standard metering and controlling devices to meet your special needs.

VENTURI METERS
TYPE M, FLO-WATCH AND CHRONOFLO METERS
VENTURI CONTROLLERS • FILTER GAUGES
LIQUID LEVEL GAUGES
RATIO GAUGES • KENNISON NOZZLES
CHRONOFLO LONG DISTANCE TELEMETERS
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ARMY E NAVY AWARDED AUG. 1st 1942

BUILDERS-PROVIDENCE, INC.

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9 CODDING STREET • PROVIDENCE, R. I.

BUILDERS WATER AND SEWAGE WORKS Equipment

(*Continued from page 34*)

reservoir being used for standby or reserve. Large water mains of the Detroit system passed close by, and the OWU engineer worked out a plan to connect this reservoir with the large water mains and thus pump water during daytime high flow demands from the Highland Park reservoir to the war plant communities, the reservoir to be filled at night with water from the Detroit System.

The plan involved a number of problems. The City of Highland Park had to be willing to make its reservoir available for the purpose; pumps and pipes and power service had to be obtained, and the project had to be financed and built. All of this was worked out in the space of a few weeks.

Highland Park agreed to rent its reservoir to the Government.

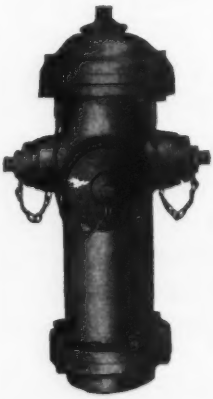
The City of Detroit agreed to furnish Highland Park with necessary standby service.

The difficult problem of obtaining pumps was solved when the City of Philadelphia agreed to lend four new 40-mil.gal. pumps which were then being completed for its own water system.

The Federal Works Agency agreed to finance and construct the project. Suppliers of equipment and services co-operated fully. The War Man-

(*Continued on page 38*)

PEACE *WILL* COME



There may be a long, hard struggle ahead but it is both sensible and patriotic to plan that postwar project *now*.

Let us assist you with required data on Valves and Fire Hydrants.

RENSSELAER VALVE CO.
TROY, N. Y.

Looking ahead with Asbestos

OFFICIAL U. S. NAVY PHOTO

When it's an ammunition depot that's needed, the Navy is apt to build it *big* and build it *fast*. This one, covering an area of 135,000 acres, used 45 miles of "Century" Pipe for water supply and fire protection.

Speed was the watchword—and the engineers naturally turned to lightweight, easily-handled K&M "Century" Asbestos-Cement Pipe. Approximately 240,000 feet of "Century" were laid as fast as the trenching machines could dig the way.

The light weight of this pipe saves hauling time—minimizes handling labor—speeds installation. Once installed, "Century" Pipe is virtually maintenance-free. It won't corrode, never tuberculates. Moreover, the flexible, leak-proof couplings simplify assembly and permit surprising adaptability . . . These are advantages well worth recalling, when you're back on peacetime problems again.

K&M is still busy with wartime obligations, but "Century" Pipe can be supplied for government-approved municipal needs. Research continues at K&M, turning up new possibilities for further application of asbestos products—a promise of greater usefulness and better service in the "V" years ahead.

Nature made asbestos;
Keasbey & Mattison, America's asbestos pioneer,
has made it serve mankind . . . since 1873

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains

K&M best in asbestos

(*Continued from page 36*)

power Commission, the U.S. Employment Service, and labor unions in the Detroit area furnished adequate labor supply to do a rush job with the result that a project that even in normal times would have required at least six months was built in eight weeks.

"It is a wonderful example of co-operation in getting an important war job done in a hurry," was the report of J. A. Krug, head of the Office of War Utilities.

A new Pittsburgh-National Meter Bulletin is No. W–539, which describes the complete line of Pittsburgh-National iron-case, cold-water meters. Cataloged, with complete specifications, are the following: Empire Victory Meter—$\frac{5}{8}$-in. and $\frac{5}{8} \times \frac{3}{4}$-in.; Empire Type 9 Meter—$\frac{3}{4}$-in. and 1-in.; Empire Large Capacity Meters—$1\frac{1}{2}$-in. through 6-in.; Pittsburgh Ironside Meters—$\frac{5}{8}$-in. through 2-in.; Gem Velocity Meters—2-in. through 12-in.; and Empire Compound Meters—3-in. through 12-in.

The manufacturer describes all these meters as made within the WPB limitation orders. Copies of this Bulletin No. W–539 can be obtained by addressing the Pittsburgh Equitable Meter Co., 400 No. Lexington Ave., Pittsburgh, Pa.

(*Continued on page 40*)

Meter Boxes
Meter Testers
Meter Yokes & Couplings

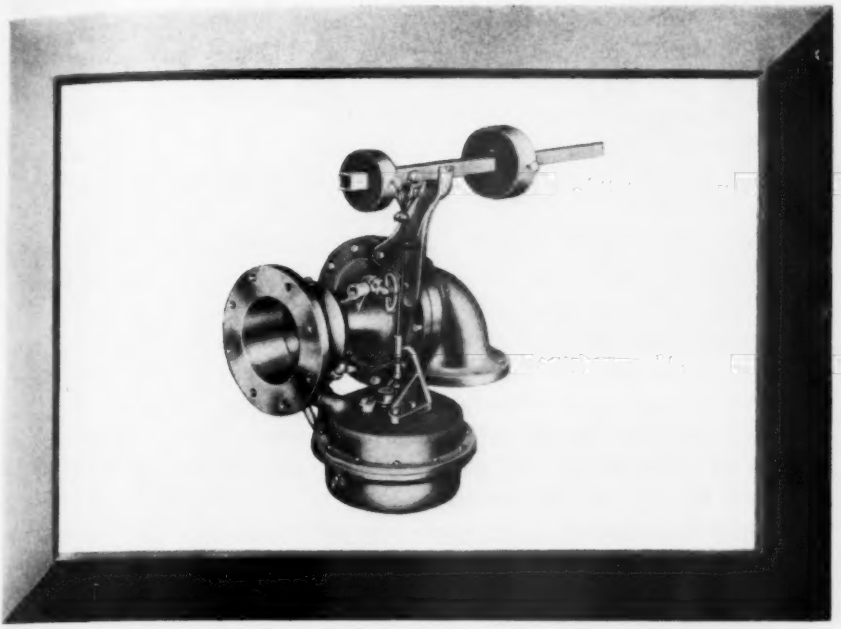
Valve Boxes
Service Boxes
Manhole Covers

Street Castings
Special Castings

H. W. CLARK COMPANY
Mattoon, Illinois, U. S. A.

HIGH QUALITY
VALVES
HYDRANTS

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34. Address M & H Valve and Fittings Company, Anniston, Alabama.



Portrait of **"A MIND AT EASE"**

Simplex "S" Controllers have established a reputation for long, dependable service that is taken for granted by thousands of design and operating men in plants all over the country.

We receive many comments from new as well as old users telling us of the steady, behind-the-scenes job our Controllers, Fluid Counterweights, and Clear Well Shut-Offs are doing to maintain peak efficiency for overburdened operating staffs in plants whose capacities are often being taxed to the very limit.

Certainly we are pleased, but not altogether surprised, since we know we have a fine line of control equipment, designed and proved as the right answer to your flow control problem.

The recently published Simplex Bulletin 250 gives clear-cut specification data that is worth filing for ready reference. Your copy will be sent immediately without obligation.

SIMPLEX VALVE & METER COMPANY
6784 UPLAND STREET, PHILADELPHIA, PENNA.

(*Continued from page 38*)

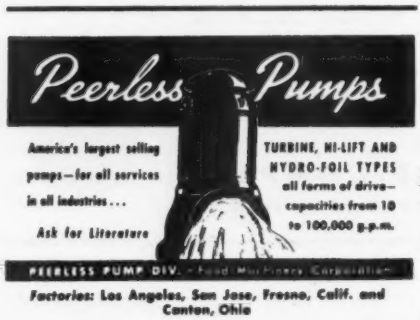
"Paying for Water Works Maintenance out of Income" is the subject of the July 27, 1943 *Citizens' Business,* published by Philadelphia Bureau of Municipal Research. The complete article follows:

"For many years now, maintenance of Philadelphia's water-supply system has been inadequate to keep the system in the best operating condition. In general, repairs and replacements have not been made as the need for them arose. It is gratifying, therefore, to find that a substantially increased amount of current income was applied to water works maintenance in 1942.

"Increase in Expenditures. Records of expenditures kept by the Bureau of water show that $2,499,077.98 was spent in 1941 out of general funds, that is, out of current income, for the operation and maintenance of the city's water-supply system. This total includes not only the expenditures made through the Bureau of Water itself, but also those made for the water bureau by the Department of Supplies and Purchases for coal, motor oil, gasoline, fuel oil, lubricants, parts, repairs, and supplies of various kinds, expenditures for electric power and light made through the Electrical Bureau, and expenditures made by the Bureau of Mechanical Equipment in repairing water works equipment. Comparable figures for 1942 give a total of $3,036,306.94 spent in that year, or $537,228.96 more than was spent in 1941.

"Less Water Distributed. The larger expenditures in 1942, however, were not caused by an increased production of water to meet the demands created by the war. Actually, the output of the water works was less in 1942 than in 1941; in fact, it was less than in any year since 1938. In 1942, the filter plants sent 116,454 mil.gal. of water into the distribution system, a decrease of 2,977 mil.gal. under the output of 119,431 mil.gal. in 1941. A trend, which had been upward each year since 1938, when 113,199 mil.gal. of water were distributed, was reversed. The output was lowered in 1942 by a successful campaign, in which private consumers co-operated, to reduce waste and unnecessary use of water.

(*Continued on page 42*)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America's largest selling pumps—for all services in all industries...
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TURBINE, HI-LIFT AND HYDRO-FOIL TYPES all forms of drive—capacities from 10 to 100,000 g.p.m.
PEERLESS PUMP DIV.
Factories: Los Angeles, San Jose, Fresno, Calif. and Canton, Ohio

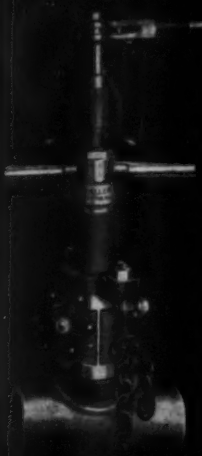
Filter Sand and Gravel

WELL WASHED AND CAREFULLY GRADED TO ANY SPECIFICATION.
PROMPT SHIPMENT IN BULK OR IN BAGS OF 100 LB. EACH.

Inquiries Solicited.

Northern Gravel Co.
P. O. Box 307, Muscatine, Iowa

USED TO ROUGH STUFF



WATER TAPPING MACHINE "B."

For tapping water mains and inserting corporation stops ¾" to 1" inclusive under pressure. This machine will also make taps only from ¾" to 2½" inclusive in dry mains.

DRILLING MACHINE "E-4."

For drilling dry or pressure mains through stops, valves or fittings with a capacity of 7-16" to 1" inclusive.

If you are wrestling with Tapping or Drilling problems, you had better take a look at your red Mueller Catalog "H" and investigate the complete line of Mueller Tapping and Drilling Machines.

These machines do many jobs with ease and dispatch. They will drill, tap and insert corporation stops in mains under pressure without shutting down the line or interrupting service. They may be adapted to other purposes such as inserting pipe plugs or will do straight drilling or tapping operations in dry pipe. The small drilling machines will drill through service clamps and corporation stops where the main is too small, weak or thin to permit tapping and the large drilling machines will drill through tapping sleeves and valves for making lateral or branch connections to main under pressure.

Mueller Tapping and Drilling Machines are a necessity for economical installation and maintenance work on water distribution systems. Perhaps you already have a Mueller Machine that has given you excellent service but is now getting a little old. If that is the case, we can recondition it or make you a liberal allowance on a trade-in for a new, up-to-date machine. Write us for the facts today.

●

MUELLER CO.

DECATUR, ILLINOIS

"MUELLER"—THE ACCEPTED STANDARD.

(*Continued from page 40*)

"Increased Expenditures for Maintenance. Larger expenditures for repairs to the water-supply system and for other maintenance work accounted for more than half of the 1942 increase in general-fund expenditures for the water works. Both in 1941 and in 1942, most of the general-fund expenditures for water works maintenance went for salaries and wages. An exact breakdown of the total expenditures for personal services has not been made, but available figures indicate that about $606,000 was spent in 1941 for payrolls on water works maintenance, and that slightly more than $699,400 was similarly spent in 1942. The increase of $93,400 was due chiefly to bonuses and higher wages granted to city employes in 1942. Money spent for parts, materials, supplies, and work done by contract brought the total maintenance expenditures in 1941 to $787,300. In 1942, the corresponding total was $1,073,400 or $286,100 larger than in 1941.

"A Step in the Right Direction. Meeting the cost of water works maintenance directly out of income is the correct thing to do. Not only does this practice save money; it also insures better maintenance of the water works. Obviously, it is more economical to pay for repairs and

(*Continued on page 44*)

LaMOTTE CHLORINE COMPARATOR
(ROULETTE TYPE)

Designed as a permanent installation in the control of chlorine dosage. The roulette unit is 13" in diameter and 8" high. It contains an internal dalite reading arrangement and all standards are in the revolving drum, permitting the operator to obtain readings in a minimum of time and under uniform light conditions, day or night.

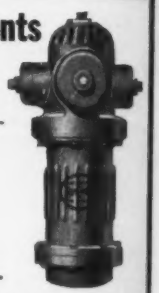
The standard model covers the range of chlorine concentration from 0 to 1.0 ppm., in intervals of 0.1 ppm. High concentrations can be measured by diluting the sample. Full instructions are furnished.

The unit comes complete with color standards, reagent solution, two calibrated comparison tubes, extension cord and switch, price $56.00 f.o.b. Towson.

LaMOTTE CHEMICAL PRODUCTS COMPANY
Dept. AWA TOWSON 4, BALTIMORE, MD.

Vogt Fire Hydrants

Standard—
"Traffic Model"—
Flush Type—
Water Crane—
Type



Vogt Gate Valves

Non-Rising Stem—Outside Screw and Yoke—Hub End—Flanged End—Ends to Fit any Type Pipe.

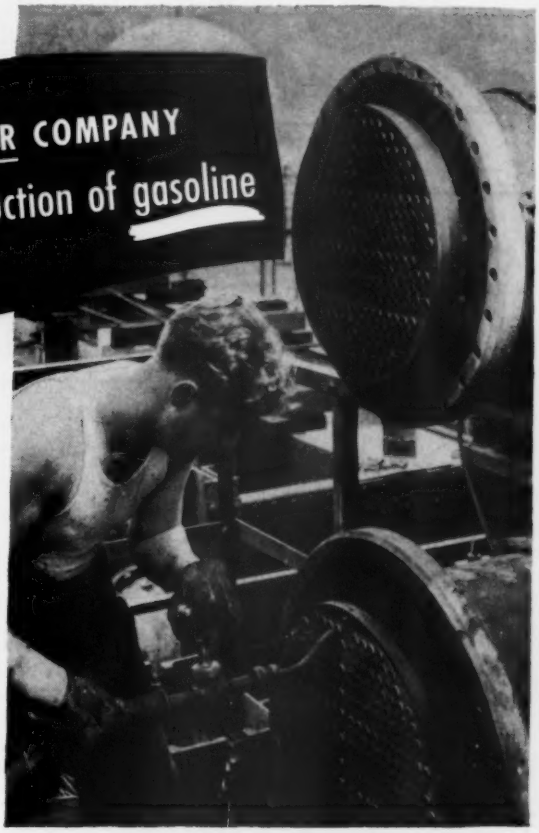
Also—Floor Stands, Shear Gates—Tapping Sleeves and Valves, Flap Valves and Mud Valves.

Vogt Brothers Mfg. Co.
INCORPORATED
MAIN AT 14th ST.
LOUISVILLE KENTUCKY

HOW A WATER COMPANY stepped up production of gasoline

Refinery Manager: *"Listen, Jim, we have to shut down altogether too often because that 'hard-as-nails' water of yours clogs up the cooling system with scale. Can't you do something about it?"*

What the Water Superintendent Did: *He called us and asked if Calgon Treatment would help solve his problem. We said we thought it would—and sent an engineer out to make sure. Today, the refineries in that city never shut down because of scale in the cooling water system—and they have had substantial increases in gasoline production.*



CALGON is one treatment that will control corrosion, prevent scale, eliminate "red water" or stabilize water after lime-soda softening. *No new problems are introduced as a result of Calgon Treatment!*

Only 0.5 to 10 ppm. Calgon are needed to accomplish any of these effects. This keeps the cost extremely low. You can start Calgon Treatment immediately. No waiting for elaborate equipment. Only a simple feeding mechanism is required.

Industrial plants need never shut down because of scale in heat exchangers and condensers. Home owners need never suffer with clogged-up water heater coils. In Calgon* you have a treatment that will keep industrial and domestic equipment operating in A-1 condition. Get the facts now.

*Calgon is the registered trade-mark of Calgon, Inc., for its glassy sodium phosphate products.

Calgon solves 4 water works problems

1. **Prevention of scale** from hard, high-bicarbonate waters. Calgon, added at the plant, prevents scale formation in mains, meters and hot-water heaters, throughout the system.

2. **Corrosion control**—Calgon forms a thin protective film on metals and metal oxides at pH values of 5.0 and higher. This reduces the attack of oxygen to such an extent that corrosion ceases to be a problem.

3. **Prevention of "red water"**—Calgon prevents the precipitation of dissolved iron. Thus "red water," either from iron initially present in well water, or from corrosion, can be eliminated.

4. **Stabilization of water** following lime or lime-soda softening. Calgon's ability to prevent precipitation of calcium carbonate stabilizes water to the ends of the system.

HAGAN HALL BUROMIN CALGON

calgon, inc.

A SUBSIDIARY OF HAGAN CORPORATION

HAGAN BUILDING PITTSBURGH PA.

PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

MABBS

MABBS RAWHIDE PACKING

An Ideal Packing for Water Works and Sewage Pumps and Valves

MABBS HYDRAULIC PACKING COMPANY, *Inc. 1892*

431 S. Dearborn St., Chicago, Ill.

(*Continued from page 42*)

replacements currently out of income than to borrow the money for them and then have to pay interest and other debt charges over a long period of years. Furthermore, if the money is made available currently out of income, repairs and replacements can be made promptly, as the need for them arises. Thus, the city would avoid getting into the situation in which it found itself in 1940. In April of that year, it will be recalled, the voters were asked to approve, and did approve, a loan of $18,000,000 for the water works. (Largely because of the war, only a small part of this money has thus far been spent.) Much of the $18,000,000 was needed to make up for neglect of maintenance over a long period."

The current advertising campaign of J. E. Sirrine & Co., Greenville, S.C., Cons., Designing and Supervising Engrs. and Architects, was awarded first honors in two classifications in the annual advertising competition of the National Advertising Agency Network at its recent War Conference in New York. The Sirrine Campaign which was "headlined" by quotations from Shakespeare and which appeared in general and trade magazines during the past year was judged best General Magazine Advertising entry and also best in the Art, Illustration and Typography section.

Promoting the prosecution of the war was the central theme of the series, each advertisement taking up a special phase of the home front effort. The titles or headlines of the advertisements were all quotations from Shakespeare and fitted into today's conditions as if they had been written to order. The opening advertisement, "Blunt not the heart, enrage

(*Continued on page 46*)

Filter Plant Equipment

COMPLETE LINE

Specializing in

Duplex Filter Bottoms

Write for Bulletin GFC-100

F. B. LEOPOLD CO., INC.

422 1st Ave. Pittsburgh, Pa.

Bring in a New Member

HELP PROMOTE YOUR ASSOCIATION BY INTERESTING YOUR FRIENDS AND CO-WORKERS IN IT.

Send for application blank

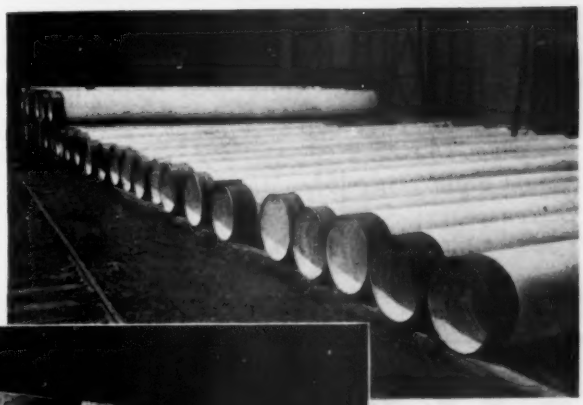
American Water Works Assn.

500 Fifth Avenue, New York 18, N.Y.

ALCO

ELECTRIC WELDED STEEL PIPE

PLAIN LENGTHS OR SPECIALS



36" O. D. Piping Ready for Loading.

Special 60" O. D. Header.

Alco Electric Welded
Steel Pipe Insures Against
Leakage and Breakage

AMERICAN LOCOMOTIVE COMPANY

ALCO PRODUCTS DIVISION

30 CHURCH ST., NEW YORK, N. Y. DUNKIRK, N. Y.

(*Continued from page 44*)

it," sets the pace that shatters complacency. Others in the series are: "Lest our lances be but straws"; "Is our metal bred out?"; "Draw the huge bottoms through the furrowed sea"; "Let us hold fast the mortal sword"; and "And 'twixt the green sea and azured vault set roaring war."

The versatile role of the Engineer against the background of war tied into each advertisement with restraint and modesty—in keeping with the ethics and dignity of the engineering profession.

The Philadelphia Network Agency member Roland G. E. Ullman, Pres. of the Roland G. E. Ullman Organization, and Account Executive handling the J. E. Sirrine & Co. account for the past 24 years, accepted the award for transmission to Mr. J. E. Sirrine.

A number of bulletins have been issued by the American Well Works at Aurora, Ill. With their respective numbers, they are: 249—Grit Removal Design; 251—Single Stage Centrifugal Pumps; 252—Iron and Carbon Dioxide Removal; 253—Sludge Removal, Conveyors; 254—Aeration Equipment; 255—Mixing Equipment; 256—Flocsettler; and 258—Screens.

(*Continued on page 48*)

SAVE FOR VICTORY

EVERYWHERE Americans are being asked to "SAVE FOR VICTORY." Water works superintendents, engineers and public officials can do more in this connection by investigating the National Method of water main cleaning. This method restores the carrying capacity of pipe to at least 95 per cent of that of new mains, thereby eliminating the necessity for purchase of new mains. Aside from this the National Method makes possible lower pumping costs, greater delivery, reduced insurance rates and clean water.

Now is the time to do your part—SAVE FOR VICTORY

National Water Main Cleaning Co.

30 Church St., New York, N. Y.

BRANCHES

115 Peterboro St., Boston, Mass.
910 William Oliver Bldg., Atlanta, Ga.
7103 Dale Ave., St. Louis, Mo.
576 Wall St., Winnipeg, Man., Canada
3812 Castellar St., Omaha, Neb.
205 West Wacker Drive, Chicago, Ill.
501 Howard St., San Francisco, Calif.
2028 Union Ave., Montreal, Canada

COMPLETE SELECTION in Socket Fittings!

Sleeve (Solid)
Fig. 521

Plug
Fig. 523

Flanged Socket
Fig. 528

Cap
Fig. 524

Every type of socket fitting needed for water works construction and maintenance is included in Grinnell's line.

Special features of Grinnell Socket Fittings:

1. Improved design cuts size and weight and lessens friction losses.
2. All socket and spigot dimensions and wall thicknesses are the same as A.W.W.A. Standard Class "D" Pipe.
3. All fittings suitable for use with Super-deLavaud centrifugally cast Bell and Spigot Pipe.
4. Although listed for only 150 lbs. working pressure, suitable for 173 lbs. water pressure as specified for A.W.W.A. Class "D" Fittings.

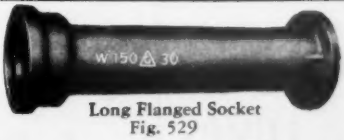
Write for Catalog 1, "Water Works Specialties". Grinnell Co., Inc., Executive Offices, Providence, R. I. Branch warehouses in principal cities.

Split Sleeve
Fig. 522

Tee
Fig. 511

Warren Coupling
Fig. 533

Reducer
Fig. 526



Long Flanged Socket
Fig. 529

Reducer
Fig. 525

Blow-off Tee
Fig. 515

¼ Bend
Fig. 501

Tee
Fig. 514

Cross
Fig. 516

Long ¼ Bend
Fig. 505

⅛ Bend
Fig. 507

GRINNELL

WHENEVER **PIPING** IS INVOLVED

(*Continued from page 46*)

An Army-Navy "E" production award has been made to the Badger Meter Mfg. Co., on June 18 at Milwaukee, by Maj. Frederick D. Hansen, Officer In Charge, Milwaukee Office, Chicago Ordnance Dist., with C. W. Wright, Pres. of the Company, formally accepting the award.

"Industrial Fire Brigades Training Manual" is being published by the National Fire Protection Association in the interest of more effective fire protection and prevention in industrial plants—both large and small.

The book fulfills three functions: first, it is a training manual designed primarily for use in classes where employees are assigned to carry out fire fighting duties under direction of the chief of the private brigade; second, it is a reference book in those plants where a fire brigade is already organized, but where the experience of a large group of experts can be profitably utilized; and third, it is of use to those plants which need the essentials, but not the details of large plant fire protection organization.

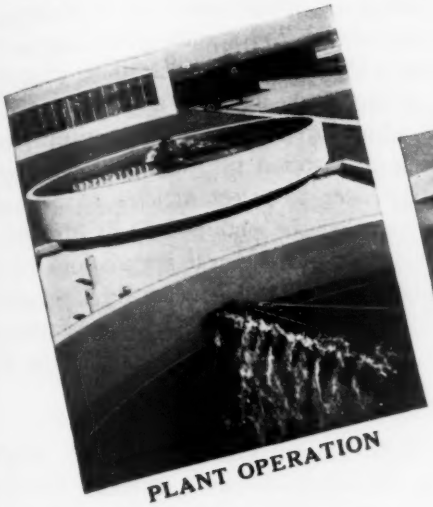
The text was prepared by the NFPA Committee on Firemen's Training, a group of leading fire chiefs and fire protection experts. It is pro-

(*Continued on page 50*)

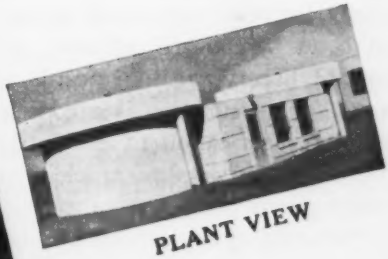
EDSON
DIAPHRAGM PUMPS
Hand Operated--sizes 2", 2½", 3", 4"
Power Operated--sizes 3" and 4"
Open Discharge or Force Pump
Skid, Truck or Trailer Mounted
COMPLETE PUMP OUTFITS
Edson Pumps - Suction Hose
Brass Couplings - Bronze Clamps
Red Seal Diaphragms
Brass Strainer or Foot Valve
Hose Spanners - Adapters - Etc.
Also—Brass Hydrant Pumps
THE EDSON CORPORATION
Main Office and Works: 49 D St., South Boston, Mass.
New York, 142 Ashland Pl., Brooklyn

SterElatorS by Everson
The Modern EVERSON SterElatorS
. . . introduce ★ New accuracy in metering Chlorine Gas. ★ Greater Precision in Feeding Chlorine in solution. ★ Safe, automatic operation, under a substantial vacuum. ★ Astonishing capacity ratios up to 1 to 110.
Write for Bulletins
EVERSON MFG. CO.
221 W. Huron St. Chicago, Ill.

American Ferrofilters



PLANT OPERATION



PLANT VIEW

Removes iron, manganese, CO_2 and other dissolved gasses and odors.

Backwashing insures uniform efficiency and eliminates renewal of clogged media.

Expensive chemical treatment and sand filters eliminated.

Lowest initial and operating costs.

Send for Bulletin No. 252

NEW BULLETINS AVAILABLE

Grit Removal Design	No. 249	Flocsettler	No. 256
Sludge Removal	No. 253	Rotary Distributors	No. 257
Aeration Equipment	No. 254	Screens	No. 258
Mixing Equipment	No. 255	Centrifugal Pumps	No. 251
Iron and Carbon Dioxide Removal		No. 252	

Buy American

THE AMERICAN WELL WORKS

AURORA ILLINOIS

MANUFACTURERS OF

Pumping,—Sewage Treatment,—Water Purification Equipment

(*Continued from page 48*)

fusely illustrated with drawings and photographs. Single copies are $1.50 postpaid from the NFPA, 60 Batterymarch St., Boston.

"The Engineering Index Service," which reviews and catalogs current technical periodical literature under 282 specialty headings in the engineering field, has recently issued a 16-page booklet describing categories and costs. Published material is classified, indexed and annotated on standard library-size filing cards which are mailed to subscribers every week. The annotation is a concise description of the article, containing sufficient information to enable the user to select articles of particular interest. The complete articles may then be obtained from libraries or directly from publishers or photoprints or technical translations of the complete text of any articles may be procured at cost from the Engineering Societies Library, 29 West 39th St., New York. Complete information on the Index may be obtained from Engineering Index Service, at the same address.

Charles W. Foulk, Prof. of Anal. Chem., Ohio State Univ., spotted the following "water story" in Muriel Rukeyser's current best-seller *Willard Gibbs—American Genius,* a biography of the famous Yale professor of the latter part of the 19th Century.

"There was typhoid fever in New Haven and the newspaper was attacking the water company bitterly. A man went into the office of the water company and the entire force crowded around him when he said he could *prove* they were not responsible. They offered him anything to prove that for them. 'Why,' he said, 'that's easy. There's a waterfall right up near the source. . . .' 'That's right,' they said, 'what of it?' 'Well,' he went on, 'it stands to reason: No microbe could get over those falls without breaking its goddammed neck!' "

Miss Rukeyser tells this tale to illustrate the state of scientific knowledge in New Haven at the end of the century!

THE COAGULANT
THAT CUTS COSTS

Write today for actual case histories
of water plants now using Ferri-Floc.

TENNESSEE CORPORATION
Ferri-Floc
FERRIC SULPHATE

TENNESSEE CORPORATION
ATLANTA, GEORGIA LOCKLAND, OHIO

NEWS OF THE FIELD

Fire protection for plants devoted to the production of military supplies has been the subject of a great deal of discussion between the Military Authorities and the War Production Board on the one hand, and the fire insurance and fire prevention interests on the other. It may be fairly stated that the one group wished to obtain maximum delivery of war supplies with a minimum expenditure of critical material for anything other than the supplies themselves; the other wished to prevent waste of materials in process by fire loss. The one group may have tended to gamble on "no fires"; the other to maintain peacetime standards of safety for temporary war activity.

However fully the various viewpoints might be expressed here, the War Production Board on August 18, 1943, announced a policy that would be followed by it hereafter:

"Under the WPB fire protection policy, which is limited to fire extinguishing equipment, protection will be provided only those resources assigned A ratings by the Resources Protection Board. Other resources will be provided fire protection only when specifically approved by that Board.

"This, it was explained, should not be interpreted as denying equipment to any plant that can prove its urgency, but urgency must be established before the use of critical resources can be justified. This is necessary to insure the best possible use of the limited quantity of materials and equipment which can be spared for this purpose.

"At the same time, WPB announced the creation of a Fire Protection Committee to which all applications for fire extinguishing equipment involving construction will be directed. This committee will be headed by Harlow Lewis, Chief of the Materials Control Branch of the Project Division, who, with the advice of the other members of the committee, will determine what constitutes reasonable fire protection. In making these decisions, the committee will take into consideration the nature of construction, the occupancy, and exposure of the facility.

"Other members of the Fire Protection Committee will include representatives of the Safety and Technical Equipment Division; the Resources Protection Board; the Fire Prevention Section, Internal Security Division; Office of Provost Marshal General, War Department; and the Fire Prevention Section, Bureau of Yards and Docks, Navy Department. The staff necessary to service the committee will be provided by the Project Division.

"Only applications for equipment involving construction, such as sprinkler systems, hydrant and hose systems, and standpipe systems, will

(*Continued on page 2*)

(*Continued from page 1*)

be directed to the Fire Protection Committee. All other priority applications for fire extinguishing equipment will be processed by the Safety and Technical Equipment Division.

"The Resources Protection Board has delegated authority to the Fire Protection Committee to approve the installation of fire extinguishing equipment involving construction in facilities other than those rated "A" by the Board, as well as the authority for concurrence in granting or denying priority assistance for the equipment. Similarly, authority was delegated to the Safety and Technical Equipment Division for approval of applications not involving construction.

"In general, the fire protection policy provides that the materials, components, facilities, and manpower required for fire protective equipment be made available insofar as compatible with other essential needs and with the objective of securing maximum protection with minimum use of critical materials."

The public water supply field has an interest in this situation to the extent that it may place upon water utilities a potential demand for water for fire fighting. Naturally, every manufacturing plant which is built in the service area of a water department is a potential demander of fire service. To the extent that the operations or the products are of a burnable character, the potential fire demands upon the water utility increase.

Since a water works executive will wish to be prepared to meet fire related demands upon his system, it will be well for him to consult fully with the fire inspection and rating bureau as well as the local fire chief to see that they possess a mutual understanding of the hazards in every war-related industry as well as a knowledge of the amount of water the department is able to furnish for fire fighting through the hydrants adjacent to the plants in question.

"Bi-Monthly Billing for Water and Power Customers Adopted" is an excellent description of wartime water works at work, reprinted in full below from the June 1943 issue of *Intake,* published monthly for the employees of the municipally-owned Los Angeles Dept. of Water and Power:

An important change in the department's billing procedure goes into effect in July, when the city's 550,000 residential consumers will begin to receive bills for water and electric service every two months, instead of monthly.

War conditions, including shortages of manpower and materials, make this new plan necessary now, according to Homer C. White, commercial director of the Department.

(*Continued on page 4*)

"For Continued Effort"
OUR ARMY-NAVY FLAG NOW CARRIES A STAR
The men and women of Builders are proud that their continued production record and spirit have again earned the Army-Navy Award "for meritorious services on the production front."
Yes, while we make postwar plans for days of peace, we do not forget that these are days of war. Since winning the coveted Army-Navy Award last summer we have relaxed not a bit in bending every effort toward the all-important and immediate task of winning the war.
BUILDERS
WATER AND SEWAGE WORKS
Equipment
ARMY
E
NAVY
BUILDERS IRON FOUNDRY
(BUILDERS-PROVIDENCE, INC.)
9 CODDING STREET
PROVIDENCE, R. I.

(*Continued from page 2*)

An educational program to inform consumers of the shift to every-other-month billing has been developed to minimize any temporary inconveniences that may result, but it is evident that there are many advantages to the consumer, incidental to the savings that the Department will effect.

All Water and Power employees are urged to familiarize themselves with the program so that they can be of service to their friends and neighbors and the public generally during the transition period. Experiences of other utilities indicate that the success of the program depends largely upon public understanding of the need for and the effects of the new billing plan.

The consumer benefits by a 50 per cent reduction in cost of checks and postage, when mails are used, and similar savings in car expense or transportation fares when bills are paid in person. Commercial division statisticians estimate that the benefits to consumers who pay by check will amount to $80,000 in a year. The cost of transportation is impossible to estimate but it will be substantial too.

From the Department's standpoint, the "skip-a-month" plan will ease manpower conditions in a number of types of work.

In meter reading, for example, 4,275,538 operations will be saved annually. Other reductions in operations expected to follow include: 13,065,418 relating to ledger cards and 13,622,803 relating to handling of bills.

These savings are particularly important at this time, with the vacation season starting. Normally, temporary replacements would be hired or remaining employees would have to work longer hours overtime. However, the additional manpower released by the "skip-month" plan will meet the summer emergency, it is believed.

No immediate layoffs are contemplated, Mr. White said, because of this factor and because additional employees over the 1110 already in the armed forces are likely to be called into the services.

Since the Department is the largest user of the U.S. mails in the city, cutting residential billing in half will alleviate demands on the over-worked postal service, which already has been obliged to ask citizens to show their zone number in order to speed mail deliveries.

In a year, the Department will send out 4,205,000 fewer pieces of mail, saving $64,000 in postage.

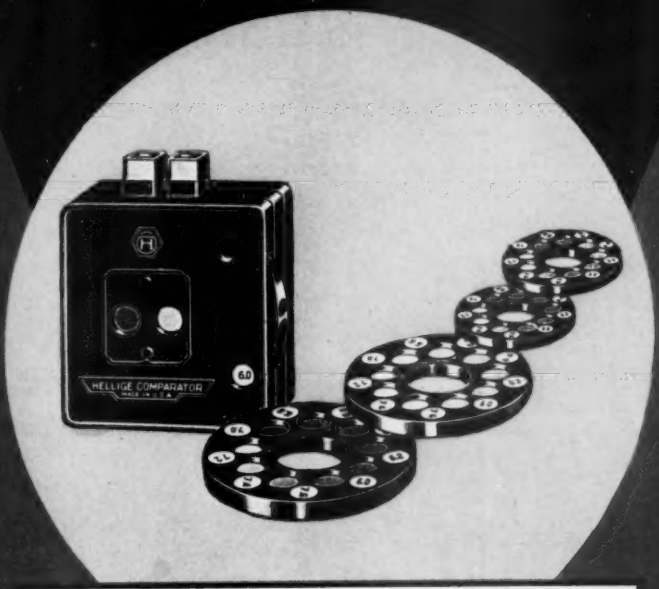
Conservation of paper and envelopes also results from the change. For example, the annual savings are estimated as follows: 3,450,000 bills (duplicate and regular); 3,300,000 envelopes; 3,300,000 ledger cards; 905,000 courtesy notices.

Other advantages, all in line with the government's plea to save wherever possible, are: thousands of telephone calls eliminated; employees' transportation requirements cut, conserving precious rubber and automotive equipment.

(*Continued on page 6*)

HELLIGE

COMPARATORS AND NON-FADING COLOR DISCS



Those who are not aware of the improvement in our deliveries will be interested to know that Hellige comparators and the very reliable solid glass color standards can now be obtained much more promptly.

Our manufacturing facilities have been expanded to the extent that we can meet our present military commitments and also produce reasonable quantities for essential civilian needs. This applies particularly to our comparators and color standards for pH determinations and water analysis.

The above illustration shows the popular Pocket Comparator with a group of color discs. Write for Bulletin No. 602, describing this and other current models.

HELLIGE, INC.

3718 Northern Boulevard
Long Island City 1
New York

(*Continued from page 4*)

Here is how the program operates. In July, approximately 275,000 residential consumers will receive regular one-month statements. These consumers then will not receive another statement until September, which will be their first two-months bill.

The 275,000 who are "skipped" in July will receive a special announcement informing them why they are receiving no bills that month. In August, this group will receive the first two-months statements to be issued. Thereafter, all homes in the city will be on a bi-monthly billing basis.

At this time it is not possible to state which homes will be in the first category and which in the second. Meter reading books are being allocated so that half will be read one month, the other half the next month. In this way there will be a continuous flow of business but the volume at any time will be only about 50 per cent of what it has been.

In computing bills, minimums and rate blocks are doubled. For example, the minimum charge for two months water service is $2.20 and for electric service $1.10. Instead of figuring 35 kilowatt-hours at the base rate of 4.4 cents for the initial block, the first 70 kilowatt-hours will be computed at that rate before the 2.2 cents block is reached, and so on

(*Continued on page 8*)

SHELDON

LABORATORY FURNITURE FOR CONTROL

★ Sheldon does more than manufacture a complete line of Laboratory Furniture. Experienced Sheldon Planning and Installation Engineers will help you plan efficient facilities for laboratory control. They also will assist you in selecting and installing furniture which will meet your needs efficiently and economically.

Write today for Catalog. Ask that our Engineers call

E. H. SHELDON & CO.

738 NIMS ST., MUSKEGON, MICHIGAN

MANUFACTURERS OF WOOD & METAL LABORATORY FURNITURE

"HERE - READ THIS! IT TELLS WHY I AM USING SUPERSEAL FITTINGS AND TUBE-LOY PIPE ON MY MAIN TO METER HOOK-UPS."

SUPERSEAL Flared Tube-Loy Fittings and ASARCO Type K Tube-Loy for Main to Meter Water Service

SUPERSEAL Flared Tube-Loy Fittings

Made of malleable iron, electro-galvanized.

Long tapered cone provides greater seating area for tubing flare . . . forms a leak-proof joint unaffected by vibration.

Three types available — tube to inside iron pipe thread . . . tube to outside iron pipe thread . . . tube to tube.

Tubing easily flared to SUPERSEAL's 10° angle with wood flaring top and tube holder.

ASARCO Type K Tube-Loy

Tubing extruded from a lead alloy . . . has all of lead's unequalled resistance to corrosion.

Uncoils readily and can be easily bent around obstructions.

Installation requires less effort than heavy walled lead pipe or relatively hard non-ferrous tubing.

Nominal sizes — ½", ¾", 1".
Stock coils — 30', 45', 60', 100'.

BOTH AVAILABLE RIGHT NOW

This combination, made of less critical materials, offers the advantages of easy handling for fast installation, long life, leakproof connections and trouble-free service.

Call your nearby Grinnell Branch for complete information and catalog, or write Grinnell Company, Inc., Executive Offices, Providence, R. I.

GRINNELL

WHENEVER PIPING IS INVOLVED

(*Continued from page 6*)

through the other brackets. The same procedure applies to water service.

While some utility companies in this area are using bi-monthly billing for their rural consumers, the Department of Water and Power is the largest utility in the West to apply this conservation measure to all of its residential consumers. It is reported that many utilities are studying the problems involved and may make the change soon. Meantime, the Department has taken a position of leadership in an important phase of utility operations under war conditions.

"Rate Regulations by States Stabilized" is an editorial in Electrical World for August 7, 1943, reprinted in full below:

"Three recent decisions have done much to restabilize rate regulation and to strengthen state regulation against interference from the outside.

"In Michigan the Public Service Commission dismissed a petition that Detroit Edison rates be reduced by the amount of excess profits taxes. In Wisconsin the commission in the Milwaukee Gas Light case denied the authority of OPA to interfere with the operation of a filed fuel clause. In Washington the District Court of Appeals denied OPA any jurisdiction

(*Continued on page 10*)

Vogt Fire Hydrants

Standard—
"Traffic Model"—
Flush Type—
Water Crane—
Type

Vogt Gate Valves

Non-Rising Stem—Outside Screw and Yoke—Hub End—Flanged End—Ends to Fit any Type Pipe.

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Specializing in
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FOR DEEP WELLS 4" OR LARGER
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The Man Behind the Man Behind the Gun Needs Protection, too!

For our Armed Forces HTH is doing a magnificent job in protecting against the deadly menace of contaminated drinking water . . . in sterilizing eating utensils . . . and, incidentally, in safeguarding against the disagreeable effects of athlete's foot.

Yet the necessity for providing adequate protection to our civilians is also vital. To that end, Mathieson HTH is still available for essential civilian needs.

Hundreds of communities throughout the nation use HTH for regular, dependable protection . . . and for quick aid in emergencies. Take the case of a burst water main—it can happen any time—any place. Prompt chlorination with Sanitation HTH, following repairs, saves time and guards against pollution.

Sanitation HTH contains 70% available chlorine, is quick-acting, easy to use, easy to transport, easily soluble. Write today for full information and your nearest source of supply.

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LIQUID CHLORINE...SANITATION HTH...HTH BLEACH...SODA ASH...CAUSTIC SODA...
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...DRY ICE...CARBONIC GAS...SYNTHETIC SALT CAKE...SODIUM CHLORITE PRODUCTS

(*Continued from page 8*)

over rate determination in allowing a rate rise to Washington Gas Light under the sliding scale agreement.

"These cases definitely reaffirm the regulatory jurisdiction of the state commissions, put OPA in its place as defined by Congress and uphold established rates and rate fixing procedures.

"The attempt in Michigan to prevent utilities from paying excess profits taxes to the government on the theory that if there is excess profit it belongs to the customers might have had far-reaching consequences if successful. The Arkansas commission had already accepted that theory and by a retroactive reduction had made it effective. Had Michigan adopted the practice, other states undoubtedly would have been quick to follow suit.

"The OPA interference was an obvious effort by a war bureau to extend its powers beyond those delegated to it by Congress. It seems now to be fairly well established that OPA has no power to seek rate reductions, to prevent rate increases or to interfere with the operation of established rates, such as fuel clauses.

(*Continued on page 12*)

Saves TIME, LABOR, MONEY

McWANE 2" CAST IRON PIPE

with THREADED *joints*

100-YEAR mains in MINUTES is a cinch even for untrained men. For all they need is a wrench—all they do is "screw 'em together."

Immediate shipments!

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BIRMINGHAM, ALA.

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FILTERS Of All Types *and* Capacities . . . Gravity . . . Pressure

SOFTENING SYSTEMS
All Types *and* Capacities—Zeolites (*synthetic and natural*) and Lime and Soda

CHEMICAL FEEDERS (wet or dry)
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Of Iron . . . Taste . . . Odors . . . Colors . . . Suspended Matter

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WATER TEST SETS
RE-CARBONATORS

The AMERICAN WATER SOFTENER COMPANY
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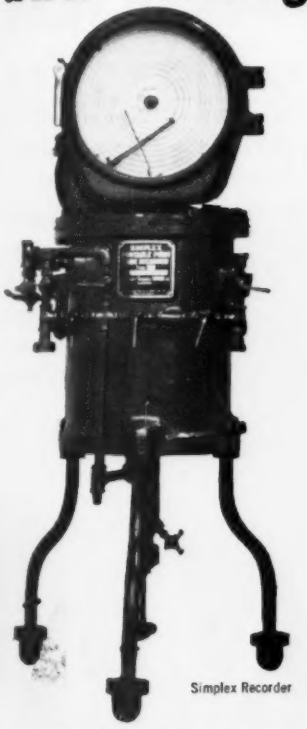

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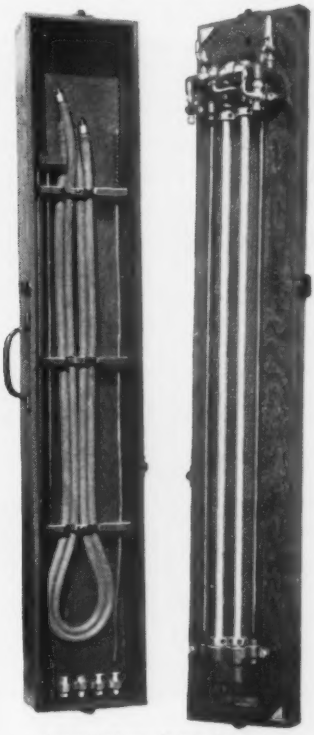
Get an up-to-the-minute overall picture of the actual operating efficiency of your water and liquid distribution systems, large pumps, meters, etc., by making a survey with Simplex Pitot Equipment.



Type MAC Simplex Portable Manometer

Simplex Pitot Tube

Present day demands on all equipment in process and water supply plants is so great that inefficiencies creep in without apparent reason and sometimes escape notice. A simple test can put the finger of suspicion on the exact spot where trouble is occurring.

A complete checking survey of your distribution lines, and units in those lines, involves very little time, and the expenditure of an almost negligible amount of money. Simplex has many examples showing where the entire cost of checking up was saved in one month by restoring the normal rated efficiency to equipment found to be under par.

Write today for Simplex Bulletin 200—Manometers; Simplex Bulletins 22, 23, 24—Pitot Equipment and Theory. Copies will be sent without obligation on request.

SIMPLEX VALVE & METER COMPANY
6784 UPLAND STREET, PHILADELPHIA, PENNA.

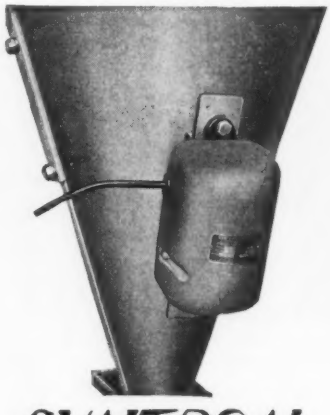
(*Continued from page 10*)

"While these interferences with the normal regulation of utilities have been very disquieting during the past year, in some ways they have been very beneficial, because in reaffirming the authority of the state the position of state regulation has been greatly strengthened over what it has been.

"While none of these decisions greatly affect the immediate utility net revenue, they will have an important bearing on the terms of post-war utility financing."

Pipe lines across creek beds and alluvial fans in Nevada are a major development in irrigation. When water was needed for bottomland hay and other crops and when gravelly alluvial fans drank up nearly all the water by late summer, metal and concrete pipes up to 12 in. in diameter were installed to carry the mountain water across these thirsty stretches to place it in the irrigation system. A great deal of new land has been broken in this area, according to the August 1943 *Soil Conservation*, published by the Dept. of Agriculture. This is in White Pine County in east-central Nevada. The entire county is one soil conservation district, being the largest such unit in the world.

(*Continued on page 14*)



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Bins, Hoppers and Chutes

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M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34. Address M & H Valve and Fittings Company, Anniston, Alabama.

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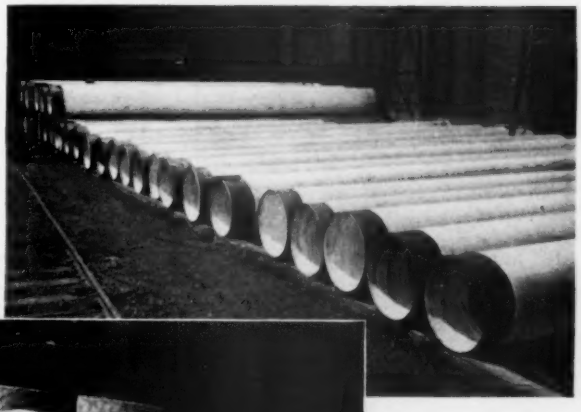
PLAIN LENGTHS OR SPECIALS



36" O. D. Piping Ready for Loading.

Special 60" O. D. Header.

Alco Electric Welded Steel Pipe Insures Against Leakage and Breakage

AMERICAN LOCOMOTIVE COMPANY

ALCO PRODUCTS DIVISION

30 CHURCH ST., NEW YORK, N. Y. DUNKIRK, N. Y.

(*Continued from page 12*)

Lt. Sidney W. Wells, formerly stationed at Fort McClellan, Ala., has been made Capt. and is now stationed at Greenwood, Miss. Before entering service in 1942, he was Chemist for the Florida State Board of Health.

D. M. McDiarmid, formerly Sr. Exec. Engr., Malayan Public Works Service, Kuala Lumpur, Federated Malay States, has written the Association under date of June 26, 1943, as follows:

"I regret the delay in making contact with you after the fall of Malaya, and I have no doubt you will have been wondering what my fate has been.

"When the Pacific War started I was on leave in New Zealand and I got back to Singapore in the last week in January 1942. From there I was sent to Java before the fall of Singapore. From Java I was one of the more fortunate to get away and I have now been posted in Nigeria."

He is now with the Public Works Dept., Lagos, Nigeria, West Africa.

C. Frank Ellis, formerly Asst. Water Supt. at the Los Banos, Calif., Water Works, has been made Supt. He has served as Plant Operator and as Asst. Supt. during the past 4½ years and previously was engaged in mechanical and electrical fields.

Raymond G. Ridgely, Director of the St. Petersburg, Fla., Bureau of Municipal Water Supply, was named Acting City Manager, taking up those duties on July 21. He has been an Active Member of the A.W.W.A. since 1930.

Herbert Moore, Cons. Engr. with headquarters in Milwaukee, has been commissioned a Captain and is at present stationed at Rome, Ga., with duties under the Medical Dept., in sanitation.

Charles V. Costello, formerly Chief Filter Operator, Water Bureau, Binghamton, N.Y., is now serving as Corp., attached to the office of the Camp Sanitarian at Aberdeen Proving Grounds, Md.

1st Lt. James H. Henderlite, with the Sanitary Corps, is now stationed at Camp Adair, Ore. He previously was connected with the Filtration Plant at Richmond, Va., and before that with the Post Utilities at Fort Bragg, N.C., and also served as City Chemist for Gastonia, N.C.

Arnold W. Langner, Supt., Light & Water Dept., Sheboygan Falls, Wis., is now serving in the U.S. Navy's Seabees as Chief Electrician's Mate, presently stationed at Camp Perry, Williamsburg, Va.

(*Continued on page 16*)

HYDRO-TITE

AND DRY BRAIDED FIBREX

A DEPENDABLE SELF-CAULKING JOINT COMPOUND FOR CAST IRON BELL AND SPIGOT WATER MAINS

HYDRO-TITE is a self-caulking sulphur base jointing compound used to joint bell and spigot cast iron water mains and soil pipe. It comes in powder form which insures uniformity and quick melting.

When poured into a joint, HYDRO-TITE immediately solidifies upon contact with the metal and bonds to both the surfaces of the bell and the spigot for the entire depth of the joint. It requires no caulking and after pouring a joint, water pressure may be immediately applied.

HYDRO-TITE is easy to use, no skill being required to make joints that are tight from the start. Joints made with HYDRO-TITE will stand any pressure the pipe will stand.

DRY BRAIDED FIBREX

USED LIKE BRAIDED JUTE WILL NOT BREED BACTERIA

A SANITARY Packing used in jointing bell and spigot pipe for water, sewer mains and soil pipe.

FIBREX was designed for use with Hydro-Tite and other self-caulking compounds, but is entirely suitable also for joints made with lead, and for Sani-Tite and other asphalt sewer joint compounds. Thousands of pounds of Fibrex are already in service on water lines throughout the country.

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Main Sales Office: 50 CHURCH STREET, NEW YORK, N. Y.

Works: WEST MEDFORD STATION, BOSTON, MASS.

(*Continued from page 14*)

Eugene F. Dugger, contrary to the recent release of the Office of War Utilities on the voluntary conservation program for water utilities, still is Gen. Mgr. for the Newport News Water Works Com., rather than at Des Moines where the OWU placed him by error. Indeed, Mr. Dugger's only recent change is for the better, he having now greatly recovered from a severe heart attack which kept him confined to his home for the past two months. Until his illness, he was active on the A.W.W.A. Committee on Wartime Activities.

Distributors and users of carriage, machine and lag bolts, as well as manufacturers, may be interested in the "Proposed Revision of Simplified Practice Recommendation R60–30 for Packaging of Carriage, Machine and Lag Bolts," copies of which are available from the Div. of Simplified Practice, National Bureau of Standards, Washington, D.C.

Priming concrete floors is covered in Bull. G–977–R2 available from The Tremco Mfg. Co., Cleveland, Ohio. Testing floors for moisture and alkaline conditions is described, as well as methods of cleaning and applying various coatings.

(*Continued on page 18*)

WANTED—

MANUAL OF WATER WORKS PRACTICE

Used Copies—in Good Condition

"The Manual of Water Works Practice" is out of print. Do you have a copy which is in good condition and with which you are willing to part? If so, send a postcard to Association headquarters, giving the year of publication and condition of your copy. Copies will be purchased by the Association at an average price of $2.50, depending upon their condition, and resold at the same price plus postage to a few persons now seeking them.

AMERICAN WATER WORKS ASSOCIATION

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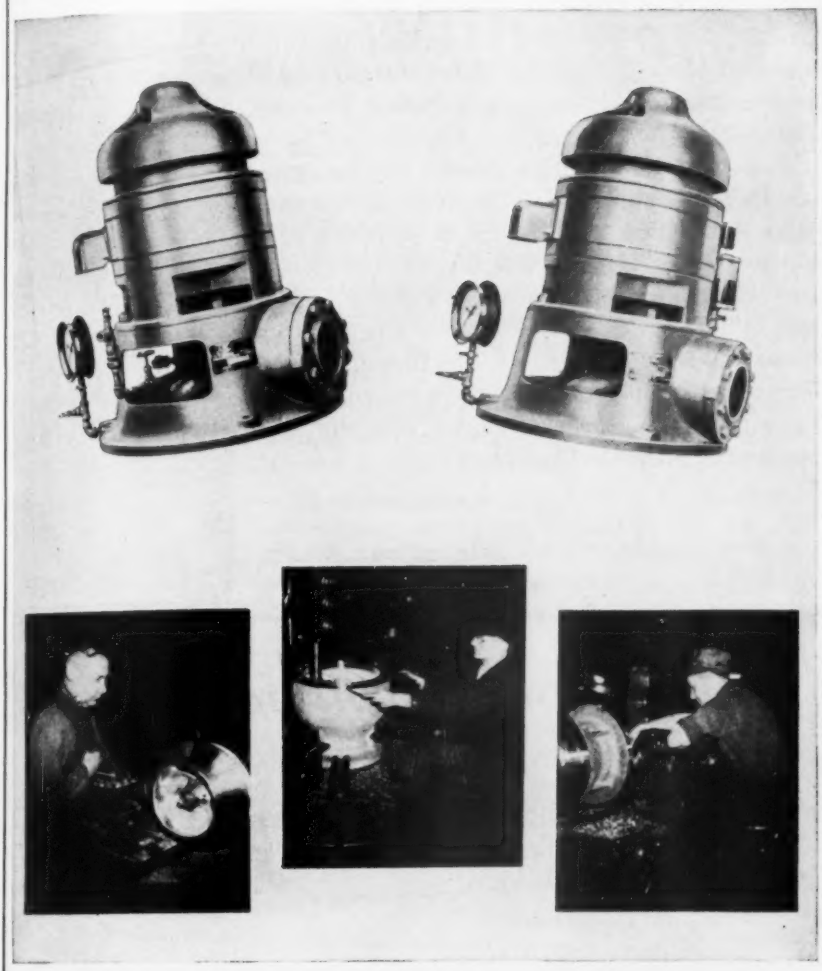
American Turbines



Send for these Bulletins

No. 245—Water Lubrication **No. 247—Oil Lubrication**

(*Continued from page 16*)

American Standards for threaded cast-iron pipe and for air gaps and backflow preventers are now available in printed form from the American Society of Mechanical Engineers, 29 West 39th St., New York, N.Y.

The complete titles are: "American Standard for Threaded Cast-Iron Pipe for Drainage, Vent, and Waste Services (A40.5–1943)" and "American Standard for Air Gaps and Backflow Preventers in Plumbing Systems (A40.4–1942, A40.6–1943)."

Joint sponsors of these works are the Am. Soc. Mech. Engrs. and Am. Public Health Assn. The A.W.W.A. representative on ASA Committee A40 during much of the development of these documents was M. Warren Cowles, Health Office for the Hackensack Water Co. Cowles has since been relinquished to the Am. Public Health Assn. and F. M. Dawson, Dean of the Univ. of Iowa College of Eng., was appointed in his place. As alternate to Dean Dawson, Richard Hazen, then Assoc. Engr. with Malcolm Pirnie, was appointed. Upon his being commissioned in the Navy, Hazen was replaced by Warren J. Scott, Director, Bureau of Sanitary Eng., Connecticut State Dept. of Health.

(*Continued on page 20*)

DIFCO

Detection of Coli in Water

This group of Difco Dehydrated Culture Media is recommended for the detection and confirmation of the presence of coliform bacteria in water. Each medium is prepared to conform to all requirements of "Standard Methods of Water Analysis" of the A. P. H. A. and A. W. W. A.

Bacto-Lactose Broth
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Specify "DIFCO"

DIFCO LABORATORIES
INCORPORATED
DETROIT, MICHIGAN, U. S. A.

They Save With

TENNESSEE CORPORATION
Ferri-Floc
FERRIC SULPHATE

FERRI-FLOC is the ferric coagulant that is today solving water treatment problems throughout the United States. In actual plant operations FERRI-FLOC is proving most satisfactory for use under widely varying conditions.

In water treatment, the use of FERRI-FLOC varies from simple coagulation at normal pH's to softening at high pH's, and color removal at very low pH's.

The purity of FERRI-FLOC has not only been maintained during present adverse conditions but has actually been improved.

The following table gives a cross-section of the water plants now using FERRI-FLOC, and an idea of the varied problems which have been successfully solved through its use:

PROBLEMS IN WATER TREATMENT PLANTS

ANDERSON, IND.	CINCINNATI, O.	DALLAS, TEXAS	DALTON, GA.	KANSAS CITY, MO.
Highly polluted surface water with special color, taste, and odor problems.	Large storage hoppers allowed caking, and "smoke" was present in settled water.	Short filter runs and relatively high cost of secondary coagulation.	A highly variable mountain stream coupled with demands for a uniformly soft finished water presented a seemingly impossible problem.	Coagulation and softening of Missouri River water without recarbonation facilities.

Take advantage of modern plant research and findings: let FERRI-FLOC solve your water or sewage treatment difficulties. Ask Tennessee Corporation's Technical Staff to help you solve your specific problems, or write for case histories of plants with problems similar to yours.

TENNESSEE CORPORATION

ATLANTA, GEORGIA LOCKLAND, OHIO

(*Continued from page 18*)

The active and sustained interest of the A.W.W.A., not alone through its representatives on ASA Committee A40, will prompt careful reference and use of these documents by A.W.W.A. members.

"Accident Facts—1943 Edition" has just been released by the National Safety Council, 20 North Wacker Drive, Chicago 6. This is a 96-page book packed with all kinds of tables, charts and breakdowns of all kinds of accidents. Chief headings are: All Accidents; Occupational; Motor Vehicle; Other Public; Aviation; Railroad; Home; School; Farm; and a 3-page Index.

A few facts highlighted from the book are: A total of 380,000,000 man-days were lost due to accidents in 1942, these costing $5,200,000,000 and being reported as 97 per cent preventable. On-the-job accidents killed 18,500 workers in 1942—500 more than in 1941. All-accident death totals for 1942 were 93,000 killed and 9,200,000 injured. The safest from accidents of any state in the union was Louisiana, and little girls from 5 to 14 years old had the lowest accident rate of any group. The largest single cause of deaths in homes was falling which took the toll of 24,800 lives in 1942.

(*Continued on page 35*)

3 *Money, Time and Labor Saving Features of*

UNIVERSAL CAST IRON PIPE

LAID WITH ONLY WRENCHES

NO CAULKING MATERIALS

NO GASKETS. NO BELL HOLES TO DIG.

For water supply, fire protection systems, sewage disposal systems, industrial, and irrigation. Flexible.

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Prevent Rusting

Rusta-Restor cathodic protection, provides *permanent protection* against rusting of water tanks, piping and steel structures of all kinds.

Initial cost of a complete equipment is about equal to the cost of a good paint job. . . . Operation costs only about 2 mills (i. e. $0.002) per year per square foot of surface protected.

If your tanks and steel structures are not now protected by this proven low-cost method, they should be. No obligation. Send for fully descriptive literature today.

RUSTA-RESTOR

Division of

THE JOHNSTON & JENNINGS CO.

862 Addison Road Cleveland, Ohio

(*Continued from page 20*)

More complete use of air compressor auxiliaries has been urged in information released by the Compressed Air Institute, Cleveland. The Institute endorses only air receivers which meet the requirements of the A.S.M.E. code. It has standardized on a line of such receivers for discharge pressure up to 125 psi. The importance of the air receiver is based upon its numerous functions in addition to normal storing of air—absorbing pulsations in the discharge of the compressor, acting as a compensator for instantaneous demands in excess of the compressor's capacity, acting as a condenser for some moisture present in the air or gas, and collecting condensation which may pass the after-cooler.

The use of after-coolers is recommended for nearly every air-compressor installation, to remove oil and water vapors by means of condensation. Water passed into the discharge line may be very destructive to pneumatic tools or other mechanical equipment.

Air filters will help keep out dust and grit which cause excessive wear in the compressor. Air silencers may be useful auxiliaries, especially when used indoors or in other locations where the noise of the suction is objectionable.

Numerous protective devices are recommended for every compressor system, such as shut-off and relief valves and automatic shut-down devices for lubricating oil failure, jacket water failure, and excess pressures or temperatures.

Syntron vibratory material handling equipment is described in a new catalog just issued by Syntron Co. This publication contains the latest information concerning the complete line of Syntron products which includes: electric vibrators for bins, hoppers and chutes; "Vibra-Flow" vibrating feeders; dry chemical feeder machines; "Weigh-Flow" gravimetric feeder machines; vibratory paper joggers; hydraulic vibrators, feeders, and feeder machines; replacement shaft seals; concrete vibrators; electric hammers; and self-contained portable gasoline hammer concrete breakers and rock drills. Installations and applications of the various equipment are illustrated. This is a 64-page catalog, numbered 435, and available upon request to Syntron Co., Homer City, Pa.

Expansion of the Pennsylvania Salt Mfg. Co.'s manufacturing activities has led to reorganization of the firm's central office manufacturing and engineering staffs by V. F. Hardcastle, Vice-Pres. in charge of Manufacturing.

Walker Penfield, formerly Mgr. of Eng., has been appointed Works Mgr. and will be in charge of all the manufacturing activities of the company and all of its subsidiaries except the Pennsylvania Salt Mfg. Co. of

(*Continued on page 36*)

(*Continued from page 35*)

Washington. William F. Mitchell, formerly Asst. to Penfield, continues in that capacity with the title of Asst. to Works Mgr.

Floyd H. Walker, formerly Chief Engr. of the Swenson Div. of the Whiting Corp., has been appointed Chief Engr. and will be in charge of the Central Engineering Div. He will have charge of new construction and will assist the manufacturing and other departments in engineering matters.

A. E. Gaydos, formerly in charge of the Central Engineering Div. under Penfield, has been named Asst. to the Vice-Pres. in charge of manufacturing and has been assigned to special duties.

Vincent K. O'Connor, formerly with the Tacoma, Wash., Office, has been appointed Mgr. of the newly created Personnel Dept., and Russell E. Cushing continues at Wyandotte as Director of the Chem. Eng. Dept., reporting to Penfield.

"Public Utility Regulation in Wartime" is a volume containing the entire 1942 Convention Proceedings of the National Association of Railroad and Utilities Commissioners. It includes roundtable discussions

(*Continued on page 38*)

METER BOX COVERS

Ford Meter Box Covers are made in a variety of types and sizes for all conditions. Double-lid covers have air-space insulation and sloping skirts which cut down heat loss to a minimum. Single lid covers have overlapping or inset lids and are made in several depths and lid sizes. All Ford Covers have the Lifter Worm Lock and are made to give a lifetime of satisfaction. Write for our catalog of better equipment for water meter setting and testing.

FORD METER BOX CO.,
WABASH, IND.

SAVE MONEY USE ACTIVATED ALUM and BLACKALUM

STUART-BRUMLEY CORP.
516 North Charles St.
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THE TIME'S COMING

. . . WHEN HILL–HUBBELL STEEL PIPE PROTECTION WILL BE IN GREATER DEMAND

When that time comes, our then realized plans will meet that demand with improved techniques.

Meantime, those whose underground steel pipe is being conserved with HILL-HUBBELL work have the security that goes with sound investment.

Write today for detailed information contained in *"THE BOOK OF PIPE PROTECTION."*

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• EXPORT OFFICE: SAN FRANCISCO, CALIFORNIA, U. S. A. •

(*Continued from page 36*)

and reports on the following, and other subjects: Effect of War Taxes Upon Utility Regulation, Present and Post-War Utility Regulation, Relations Between Federal War Agencies and State Regulatory Commissions, Wartime Transportation Problems, Service Company Costs, Uniform Power Factor Clauses in Electrical Rate Schedules and Fuel Adjustment Clauses in Utility Rate Schedules, Telephone Separation Studies, Utility Finance, and Accounting and Valuation Problems. The book will be sent postpaid upon receipt of $6 by the N.A.R.U.C. at 7413 New Post Office Bldg., Washington, D.C. Some of the above reports are available as separate reprints at $1 each. A report available at $1 is "Interpretations of Uniform System of Accounts for Water Utilities."

The "1942 Book of A.S.T.M. Standards" is in three parts, has 1090 specifications and tests and 4900 pages. The A.S.T.M. has continued the policy first used with its 1939 book of standards, that is, that of publishing all specifications, whether formal standards or tentative. The new book is issued in these three parts:

(*Continued on page 40*)

SAVE FOR VICTORY

EVERYWHERE Americans are being asked to "SAVE FOR VICTORY." Water works superintendents, engineers and public officials can do more in this connection by investigating the National Method of water main cleaning. This method restores the carrying capacity of pipe to at least 95 per cent of that of new mains, thereby eliminating the necessity for purchase of new mains. Aside from this the National Method makes possible lower pumping costs, greater delivery, reduced insurance rates and clean water.

Now is the time to do your part—SAVE FOR VICTORY

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STATIONARY COMPRESSORS	PORTABLE COMPRESSORS
ROCK DRILLING EQUIPMENT	CONSTRUCTION AIR TOOLS
MULTI-V-BELT DRIVES	AIR LIFTS
STEAM TURBINES	SPEED-CHANGE GEARS
WATER SOFTENERS	PRESSURE FILTERS

WATER METERS

A complete line of water meters of every type is manufactured by Worthington-Gamon Meter Company, a subsidiary of Worthington Pump and Machinery Corporation.

WORTHINGTON PUMP AND MACHINERY CORPORATION
WORTHINGTON-GAMON METER COMPANY
General Offices: HARRISON, NEW JERSEY — Offices and Representatives in Principal Cities

IC3-10

(*Continued from page 38*)

Part I—Metals: Ferrous and non-ferrous metals (all A and B and E serial designations) except methods of chemical analysis. General testing methods (E serial designations).

Part II—Nonmetallic Materials—Constructional: Cementitious materials, concrete and aggregates, masonry building units, ceramics, pipe and tile, thermal insulating materials (all C serial designations). Timber and timber preservatives, paint, varnishes and lacquers, road materials, waterproofing and roofing materials, soils (certain D serial designations). General testing methods, thermometers (E serial designations).

Part III—Nonmetallic Materials—General: Fuels, petroleum products, electrical insulating materials, rubber, textiles, soaps and detergents, paper, plastics, water (remainder of D serial designations). General testing methods, thermometers (E serial designations).

Each part of the 1942 Book has a complete subject index.

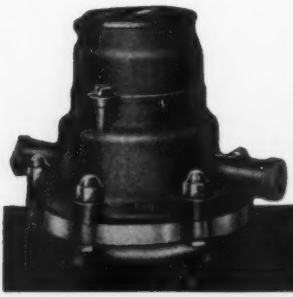
Such a complete book is issued every three years, and to keep the parts up to date in 1943 and 1944, a supplement will be issued to each part in each of these years. The cost of each of the three parts of the 1942 Book is $9; the charge for Supplements is $3 for each part, each year; and for half leather binding $1 should be added for each part or Supplement part. Copies may be obtained from the American Society for Testing Materials, 260 South Broad St., Philadelphia, Pa.

The A.S.T.M. is also issuing a new edition of its volume of chemical analysis of metals, including 21 widely used standards for both ferrous and non-ferrous metals. This book will be issued later in 1943. These methods are not included in the Book of Standards.

Electrification and building of high-tension, steel-tower transmission lines running out of Boulder Dam to various pumping plants that bring water to Southern California is described in a new bulletin, "The Story of Ziebarth Construction," recently issued. Also covered are a dozen tasks performed by Ziebarth for the Bonneville Power Adminis-

(*Continued on page 42*)

NIAGARA IRON CASE WATER METERS



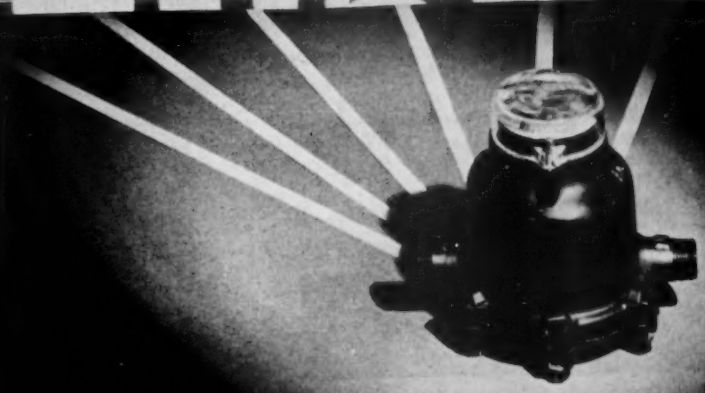
provide wartime copper conservation plus the time-proved Niagara design. They comply with victory-meter limitations. Works are interchangeable with American Bronze Case Meters.

WRITE FOR CATALOG.

BUFFALO METER COMPANY
Established 1892 2914 Main St., Buffalo, N.Y.

The name **HERSEY** has been predominant for more than half a century in the water works field.

HERSEY



(*Continued from page 40*)

tration, and other big hydro-electric projects including Grand Coulee, and Fort Peck Dams. In addition are shown some of the pumping plants, water supply and sewage plants built for Army camps; the creation of airport facilities; the installation of telegraph, telephone and railroad signal lines; the building of mile-long "bridges" of high tension wire through hazardous mountain terrain and across Lake Chelan; and the building of the world's largest single electrical installation at Basic Magnesium, Inc., Las Vegas, Nev. The twenty-four page illustrated booklet is available from Fritz Ziebarth, 860 West Esther St., Long Beach, Calif.

"Two beer bottles"—that's what the Pan American Airways System release says—"filled with water, recently comprised one of the most unusual shipments ever flown in the cargo holds of the Clippers."

No report is made of gremlins on that trip—but there should have been such, if the high-flown spirits of the A.W.W.A. Water Purification Division boys were available for proper gremlin grousing about storing water in beer bottles!

The release continues: "The water, a carefully-drawn sample from

(*Continued on page 44*)

Dependable

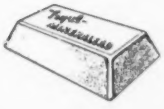
A WAR TIME LESSON

Scattered country wide, Kupferle Fire Hydrants, some fifty years old, are giving trouble free service. Kupferle dependability is emphasized in war time—but is always important.

JOHN C. KUPFERLE FOUNDRY CO.
St. Louis

KUPFERLE
FIRE HYDRANTS

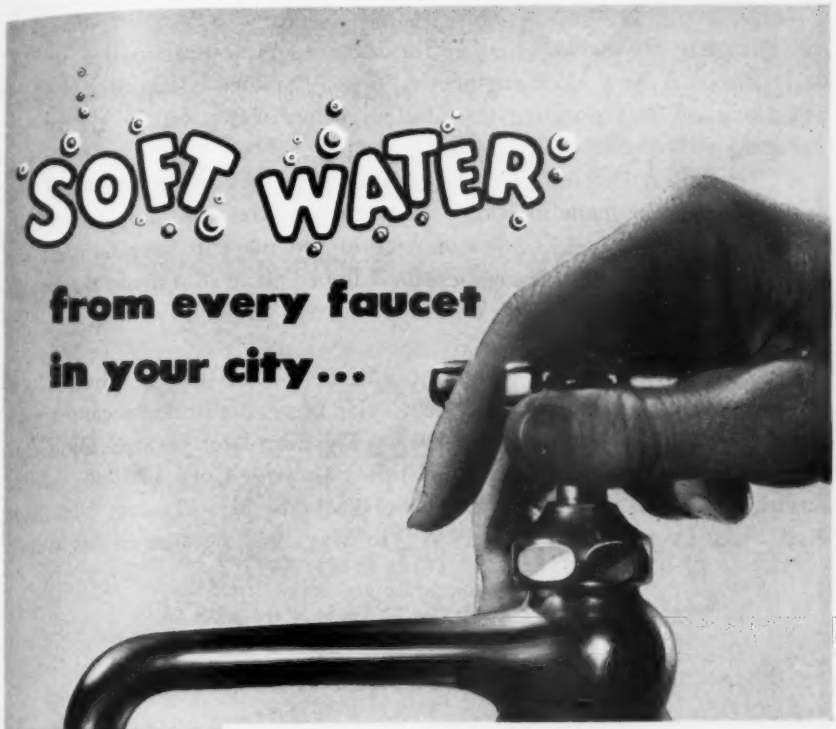
Stocks of Tegul' MINERALEAD are maintained at convenient points over the U. S. A. and this better jointing compound is usually available without delay.



Enjoy the advantages and sound economies which, in total, are found only in this ingot form jointing compound for bell and spigot water main.

For further information, write

THE ATLAS MINERAL PRODUCTS COMPANY OF PENNSYLVANIA
Mertztown · Penna.



New low-cost method puts it in reach of every community

EVERY home in your city—every shop, every factory—can enjoy soft, sparkling water at the turn of a tap. Recent developments by Permutit* make it more practical than ever.

Your city may best be served by a zeolite water softening plant, a Spaulding Precipitator for cold lime softening or by the new cold lime method—the "Spiractor" Permutit equipment for these processes is modern and economical.

Better water will contribute heavily to the happiness and prosperity of post-war cities. Plan it now for *your* community. Write for details to The Permutit Company, Dept. G2, 330 West 42nd St., New York 18, N. Y. In Canada: Permutit Co. of Canada, Ltd., Montreal. *Trademark Reg. U.S. Pat. Off.

PERMUTIT

WATER CONDITIONING HEADQUARTERS

(*Continued from page 42*)

the Paraguay River, was needed for bacteriological examination in Rio de Janeiro. A New York engineering firm (Parsons, Klapp, Brinckerhoff and Douglas) was planning the first municipal water supply system for Paraguay's river-side capital of Asuncion.

"Therefore, careful analysis of the water was necessary and the analysis had to be made in Rio. Twelve hours after the sample had been drawn it would be useless for examination and the only way to meet the time limit was to rush the shipment by Clipper plane of Panair do Brazil, Brazilian affiliate of the Pan American Airways System."

E. A. Phoenix has been appointed Asst. Mgr. of the Johns-Manville Transite Asbestos Pipe Dept. He began his business career with the Kieselguhr Co. of America in 1915. This firm later became The Celite Products Co. which became a part of Johns-Manville Corp. in 1928. After serving in various sales and advertising positions, Mr. Phoenix was made Asst. Sales Promotion Mgr. in 1936. In May 1942, because of his knowl-

(*Continued on page 46*)

NO MORE RUST

Will Form Inside Your Steel Tanks If You Use

"RUSTOP"

STOPS CORROSION – Immediately, Permanently, and **ECONOMICALLY.** No Sandblasting, Scraping or Painting. Many Types of Special Applications.

Write immediately for complete data and quotations—No obligation.

THE APPROVED METHOD

RUSTOP THE CATHODIC SYSTEM OF CORROSION PREVENTION

ELECTRO RUST-PROOFING CO.
DAYTON • OHIO

EDSON

DIAPHRAGM PUMPS

Hand Operated--sizes 2", 2½", 3", 4"
Power Operated--sizes 3" and 4"

Open Discharge or Force Pump
Skid, Truck or Trailer Mounted

COMPLETE PUMP OUTFITS

Edson Pumps – Suction Hose
Brass Couplings – Bronze Clamps
Red Seal Diaphragms
Brass Strainer or Foot Valve
Hose Spanners – Adapters – Etc.

Also—Brass Hydrant Pumps

THE EDSON CORPORATION
Main Office and Works: 49 D St., South Boston, Mass.
New York, 142 Ashland Pl., Brooklyn

CAST IRON PIPE

Manufactured in Sizes 2" to 96"—
A large stock constantly on hand,
facilitating prompt shipment.

Flanged Pipe

Special Castings

Flexible Joint Pipe

Bell and Spigot Pipe

Warren Spun Centrifugally Cast Iron Pipe

Short Body B. & S. Specials

Warren Foundry & Pipe Corp.

and

Warren Pipe Co. of Massachusetts, Inc.

Sales Offices
11 BROADWAY, NEW YORK, N. Y.
75 FEDERAL ST., BOSTON, MASS.

Works
PHILLIPSBURG, N. J.
EVERETT, MASS.

(*Continued from page 44*)

edge of the company's widely diversified line of products, he was transferred to the Priorities Dept., remaining there until his recent promotion.

A form for a card index record for electric motors has been arranged as shown below. The operator may use this information as a guide to develop his own cards of 4 × 6-in. or other size to fit his own system.

Hp.	Syn. Speed	Make	Connection Diagram	Application	Shop or Mill No.	Card No.

Type	Frame	Poles	F. L. Speed	Volts	Form	Temp. Rating	F. L. Amp.	Phase	Cycles

Serial No. Model No.	Publication No.	CONTROL EQUIPMENT Type Make Pub. No.
BRUSHES No. per Motor Cat. No. Size Material Grade	COILS (Cat. or Spec. No.) Stator or Field Main Comm. Comp.	
LININGS Front End, Cat. No. Pulley End, Cat. No.	Rotor or Armature Coils Bars No. per Set	Connection Diagram
PULLEY Diam. Face Belt Width Bore Keyway	Mfr.'s Order No. Our Order No. Date of Order Cost { Motor / Control }	User: Location:

REMARKS:

(See page 48 for information for other side of card.)

(*Continued on page 48*)

ZECO GREENSAND ZEOLITE

Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

ZEOLITE CHEMICAL CO.
90 WEST STREET NEW YORK, N. Y.

1879—ROSS—1879

AUTOMATIC VALVES

ALTITUDE VALVE

Controls elevation of water in tanks, basins and reservoirs

1. Single Acting
2. Double Acting

Maintains safe operating pressures for conduits, distribution and pump discharge

SURGE-RELIEF VALVE

REDUCING VALVE

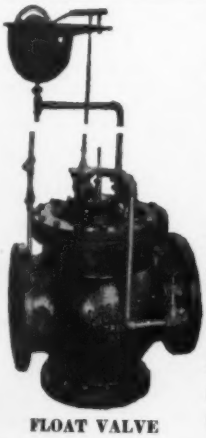
Maintains desired discharge pressure regardless of change in rate of flow

Regulates pressure in gravity and pump systems; between reservoirs and zones of different pressures, etc.

A self contained unit with three or more automatic controls

COMBINATION VALVE

Combination automatic control both directions through the valve.

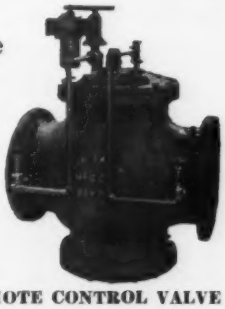


FLOAT VALVE

Maintains levels in tank, reservoir or basin

1. As direct acting
2. Pilot operated and with float traveling between two stops, for upper and lower limit of water elevation.

Electric remote control—solenoid or motor can be furnished



REMOTE CONTROL VALVE

Adapted for use as primary or secondary control on any of the hydraulically controlled or operated valves.

Packing Replacements for all Ross Valves Through Top of Valve

ROSS VALVE MFG. CO., INC., P. O. BOX 593, TROY, N. Y.

(*Continued from page 46*)

SERVICE RECORD

Date	Building	Floor	Driving	Drive	Tested Hp.

REPAIRS

Date	Condition	Due to	Repaired by	Cost

America's fighting men in tropical jungles are now armed against malaria and yellow fever with a new "health bomb" that exterminates disease-carrying insects.

The new weapon is an insecticide dispenser that discharges a mist fatal to disease-spreading flies and mosquitoes, but harmless to humans. The six-inch metal dispensers—each about the size of a tin can—are called "bombs" by workmen who make them at the rate of thousands a day in an eastern Westinghouse plant.

With the dispenser, the Army hopes to reduce sharply the casualty rate of past wars, in which disease incapacitated as many men as did bullets. The "health bombs" will be discharged frequently in tents and barracks wherever troops are stationed in the tropics, and in the cabin of every airplane—military and civilian—that takes off from a tropical base.

Each dispenser is loaded with one pound of a liquid insecticide developed by Dr. Lyle D. Goodhue, a young Dept. of Agriculture chemist. The insecticide is released as a fine mist that remains suspended in space.

In the 12 to 14 minutes required for complete discharge, one dispenser will fumigate 150,000 cu.ft. of space, the equivalent of 240 Army pup tents, or 50 giant bombers. But the spray can be turned on and off as necessary. For example, only three seconds are required to fumigate one pup tent.

(*Continued on page 50*)

The Pipe of Peace Has Gone To WAR

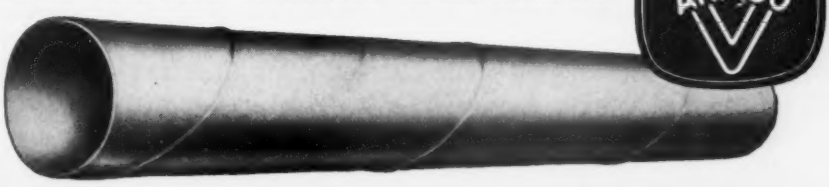
The same ARMCO Spiral Welded Steel Pipe that was the choice of so many engineers for peacetime water supply and force mains is now being used on vital war projects.

Here, of course, it will continue its record for efficient, maintenance-free service. A spun-enamel lining assures high flow capacity, prevents tuberculation and recurrent cleaning troubles. Fifty-foot lengths mean fewer joints, less assembly work. And ARMCO Steel Pipe has an ultimate strength of 50,000 to 60,000 pounds per square inch to guard against shattering and sudden breaks. Sizes range from 6 to 36 inches, with wall thicknesses in any diameter to fit specific jobs.

Remember, if you can't get ARMCO Pipe now for other than the most important war projects, it is because the steel is going into tanks, trucks and ships. After the war ARMCO Steel Pipe will be ready again to meet your every requirement. The American Rolling Mill Co., Pipe Sales Division, 501 Curtis St., Middletown, Ohio.

ARMCO STEEL PIPE

MEETS A.W.W.A. STANDARD SPECIFICATIONS



(*Continued from page 48*)

Standards calling for the designation of the thickness of thin flat metal and wire diameters in decimal fractions of an inch are now released. These are "American Standard for Preferred Thicknesses for Uncoated Thin Flat Metals (B32.1–1941)" and "Preferred Sizes for Round Wire." They are available from The American Society of Mechanical Engineers, 29 West 39th St., New York 18, N.Y. The material below, describing these standards, is reprinted complete from a released reprint from the August 1943 issue of *Mechanical Engineering*.

These are times when long established practices are being changed, new materials substituted for those long in use, and new designs developed to adapt the new materials to old and new uses. Such a period in our national and industrial history presents an excellent opportunity for the gradual adoption of a logical unified system for designating sheet metal thicknesses.

For many, many years the mechanical industry has allowed itself to be hampered by the use of various series of gage numbers to designate the thickness of iron and steel sheets as well as those of copper and brass. Such names as "American Wire Gage" (Brown and Sharpe Wire Gage), "Birmingham or Stubs Iron Wire Gage," "Stubs Steel Wire Gage" (Drill Gage), "Washburn & Moen Steel Wire Gage," "American Steel and Wire Gage," and "United States Standard Gage for Sheet Steel," have become part of the vocabulary of every designer and shop mechanic. The unfortunate part of this old vocabulary, however, is that the numbers in the various systems signify different thicknesses and none of them are readily converted into inches. This necessitates constant reference to gage tables.

Over the years there has been a gradual breaking away from these numbered systems in favor of the use of decimal fractions. Realizing this trend, in 1925 the Society of Automotive Engineers recommended to the American Standards Association the setting up of a preferred system of gage numbers based on the inch measure and some logical system of numbers. After all of the preliminaries of the ASA procedure had been completed a fully representative technical committee was set up by the SAE and the ASME acting as joint sponsors. Twenty-two (22) organizations cooperated in this activity. Prof. A. L. Townsend of M. I. T. accepted the chairmanship of the technical committee, R. G. Kenly accepted the secretaryship. The Subcommittee, which was headed by H. W. Tenney, named a subgroup to draft the first proposal. H. W. Robb acted as chairman of this subgroup. In due time the subgroup produced a proposed standard table of Preferred Thicknesses for Uncoated Thin Flat Metals (Under 0.250 In.). This was broadcast to industry for criticism and comment and in August 1941 with slight modifications it was approved as an American Standard by the ASA.

For those who may not have a copy of this American Standard in their

(*Continued on page 52*)

EVERY NOTEWORTHY IMPROVEMENT

in water treatment technique has a sound development and research program behind it.

Our ozone process for taste, odor, and color removal is a case in point.

In our laboratory—the most complete ever assembled solely for ozone research—our staff of bacteriologists, chemists, and physicists are continuously at work.

As theories are verified, new applications thoroughly explored and proved, they are filed for postwar application—our contribution to the better world America is fighting for.

We solicit correspondence from those members of the water works industry who are interested in a better and simpler way to solve their taste, odor, and color removal problems.

Write for our new booklet "Ozone Treatment of Water" by Victor Hann.

OZONE PROCESSES
INCORPORATED
1500 WALNUT ST., PHILADELPHIA 2, PA.
A wholly owned subsidiary of Welsbach Engineering and Management Corporation

(*Continued from page 50*)

files, the table is reproduced below:

Preferred Thickness for Thin Flat Metals
Uncoated (B32.1–1941)—Thickness in Inches

	0.180	0.090	0.045	0.022	0.011	
	0.160	0.080	0.040	0.020	0.010	0.005
	0.140	0.071	0.036	0.018	0.009	
	0.125	0.063	0.032	0.016	0.008	0.004
0.224	0.112	0.056	0.028	0.014	0.007	
0.200	0.100	0.050	0.025	0.012	0.006	

This job completed the subcommittee turned its attention to the second half of its assignment, namely, the proposing of a standard series of Preferred Sizes for Bare and Metallic Coated Round Wire. The subcommittee named a new subgroup for this job with J. R. Townsend as chairman.

After eleven months of careful study of this problem by the members of the subgroup, which is made up of manufacturers and users of many types of round wire, the following standard system of sizes was proposed:

TABLE 1: *Preferred Sizes for Round Wire—Diameters in Inches*

	0.344	0.180	0.090	0.045	0.022	0.011	0.0056		
	0.312	0.160	0.080	0.040	0.020	0.010	0.0050	0.0025	0.0012
	0.281	0.140	0.071	0.036	0.018	0.009	0.0045		
0.500	0.250	0.125	0.063	0.032	0.016	0.008	0.0040	0.0020	0.0010
0.438	0.224	0.112	0.056	0.028	0.014	0.007			
0.375	0.200	0.100	0.050	0.025	0.012	0.0063	0.0032	0.0016	0.0008

(*Continued on page 54*)

CUMULATIVE INDEX TO THE JOURNAL AND PROCEEDINGS

1881–1939 Inclusive

The Cumulative Index to the Journal and Proceedings of the American Water Works Association is ready for its place on your shelves, where it will render your bound volumes of these publications far more useful for ready reference. After this edition was printed the type was torn down, and future indexes will commence with the issue of January, 1940. Get your copy *now*. Price to members, $1.75; to members for cash with order, $1.50; to non-members, $2.00. Write to:

The American Water Works Association
500 Fifth Avenue, New York 18, N. Y.

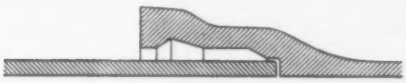
Clow-National

CAST IRON PIPE AND FITTINGS

CAN BE FURNISHED TO MEET THE REQUIREMENTS OF ALL EXISTING SPECIFICATIONS

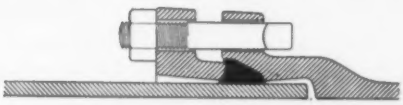
SUPER-deLAVAUD CENTRIFUGALLY CAST

The standard water bell is the most common type of cast iron pipe joint—popularly known as the "bell and spigot" joint. Available in sizes 3 to 24 inches inclusive, in 12 and 18-foot lengths, and for working pressures up to 250 pounds.



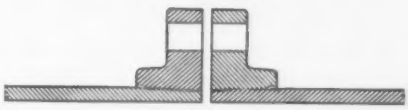
Standard Water Bell

A time-saving, easily installed mechanical joint cast iron pipe now used extensively. Made in all sizes from 3 inches through 24 inches, in 18-foot lengths, and for pressures up to 250 pounds.



"C-N" Mechanical Joint

Cast iron flanged pipe is widely used for exposed pipe line work, inside and outside of buildings, for conducting water, steam, gas, oil and other fluids. Comes in same sizes and for same pressures as listed above, and in 12 and 18-foot lengths.



Flanged Joint

At last—THE PERFECT "TEST PLUG"

NO LEADING OR CALKING—ONLY A RATCHET WRENCH NEEDED

F-1170 Test Plug made in sizes 3 to 12 inches

Use it for testing newly laid mains as work progresses and for protection against introduction of foreign matter into open pipe ends at the close of each day's work—or for temporarily plugging the bell opening of pipe or fitting awaiting future extension of service.

Plugs are shipped complete—ready for use—with tappings (closed by screw plugs) provided for pressure pump connection and for venting air. We furnish nipple and shut-off cock for air release.

Makes an ideal cleanout plug

EASILY INSTALLED—EASILY REMOVED

JAMES B. CLOW & SONS

201-299 N. Talman Avenue (P. O. Box 6600 A) **CHICAGO 80, ILLINOIS**

NATIONAL CAST IRON PIPE

(A Division of James B. Clow & Sons)

BIRMINGHAM 1, ALA.

Everything for the municipal water supply system

(*Continued from page 52*)

This proposal was distributed broadly to industry for criticism and comment. Of the 139 replies received, 74 indicated approval or were noncommittal and 65 offered comments and suggestions. Of the latter 65 replies 11 were in substantial agreement with the standard, 16 approved the standard with reservations, and 38 were opposed.

The principal opposition to the adoption of this new standard came from certain manufacturers and users of copper wire. This group has been using the American Wire Gage almost exclusively for electrical design purposes for a number of years and all of their design and technical data are in terms of this gage. It is desired, therefore, that a careful study be made of the proposed system of preferred sizes to determine if it can be brought in line with the present deeply entrenched usage in that industry. There are some indications that this can be done but active study of this question is postponed for the duration of the war.

So, when the subgroup's report was presented to the subcommittee at a meeting held in New York on December 1, 1942, the following action was taken after full discussion:

"VOTED: that the project (proposed American Standard for Preferred Sizes for Bare and Metallic Coated Round Wire (0.500 In. and Under)) be tabled for the duration of the war, but that it be kept alive by discussion, correspondence, and comments from industry for revival in the postwar period."

There is much less standardization in the mechanical uses of wire than there is in the electrical applications. So a great deal could be gained by the general acceptance of a uniform system of numbers, based on the inch unit of measure, which has been carefully worked out by a group of experts in this field. The completion of this study and report makes it possible for all those who realize the need for and the advantages to be gained by the use of such a uniform system of numbers to study this proposal during the period of the war and to express their views to the committee.

For further information, address: The American Society of Mechanical Engineers, 29 West 39th St., New York 18, N.Y.

Elmer C. Schwier was elected Secy. and Asst. Treas. of the Indianapolis Water Co. at a meeting of its Board of Directors on August 11. His election fills the vacancy created by the death of Frank C. Jordan

(*Continued on page 56*)

COOK Well Strainers

A reciprocal relation, the life and functioning of the one depending much on the other.

A. D. COOK, INC.

Lawrenceburg - Indiana

COOK Deep-Well Turbine Pumps

From the SOLOMONS to REYKJAVIK...

CHLORINE performs a vital service!

From Iceland's rocky shores to the steaming South Sea jungles, chlorine and chlorine compounds are protecting the health of our fighting men.

One of the most serious threats to the physical welfare of troops—particularly in an invading or occupying force—is water-borne disease. Chlorine is most effective in fighting this ever-present hazard. That is why it is an *essential* part of the equipment of every unit of our armed forces—protecting vital water supply and promoting sanitation. It represents a service we are proud to perform.

Our wartime experience in producing chlorine for this and many other urgent and vital needs will help us to serve you better after this war is won.

CHEMISTRY IS THE KEYSTONE OF INDUSTRY

PENNSYLVANIA SALT MANUFACTURING COMPANY

Chemicals

1000 WIDENER BUILDING, PHILADELPHIA 7, PA.

New York • Chicago • St. Louis • Pittsburgh • Minneapolis • Wyandotte • Tacoma

(*Continued from page 54*)

on June 26. Ralph L. Swingley was elected Asst. Secy. and Edward G. McCreery was elected Asst. Treas.

Water War Production is real—and earnestly set forth for Los Angeles by the following article from the August 1943 issue of *Intake*, published monthly for the employees of the municipally-owned Los Angeles Dept. of Water and Power:

If anyone thinks that the Department of Water and Power and its employees are not right in the middle of the war production battle, here are amazing facts about two industrial giants, both served with municipal water and power.

War industry giant No. 1 is the aluminum plant. Last month this one plant used 50 per cent *more* electric power than all the 550,000 homes, flats and apartments in the entire city of Los Angeles.

And it used almost as much power as all the other industries in the City combined.

When the local aluminum plant is operating at capacity its kilowatt-hour consumption will greatly increase. It may use as much power as all other industries and all residences combined!

War industry giant No. 2 is synthetic rubber.

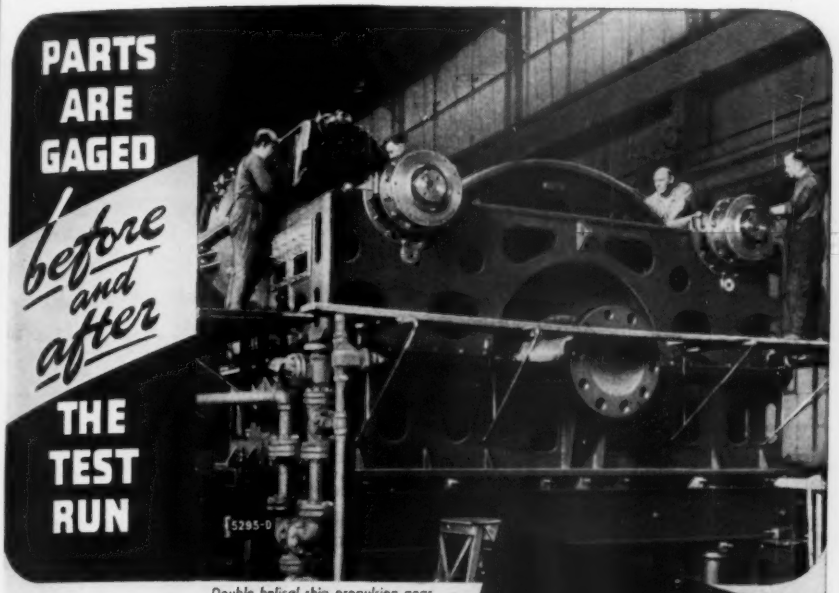
(*Continued on page 58*)

ANY OLD JOURNALS FOR SALE?

Do you have back issues of the JOURNAL which you will make available to the Association to help replenish its stock? Send a post card telling which you have of the numbers listed below and 50 cents will be paid for each copy obtained.

1920—January, March
1922—January, March, May, July
1924—January, March, May, July, September
1925—August
1926—January, February, March, April, May, June, July, August, September, October, November, December
1927—July
1928—January
1929—January, February, March, April, October
1930—January, February, April, May, November, December
1936—January, March, April
1937—January, March, July, October
1938—January
1939—January, March, October
1940—January
1941—July, September
1942—January

American Water Works Association
500 Fifth Avenue **New York 18, N. Y.**



Double helical ship propulsion gear on test floor at the De Laval Works

In the De Laval Works each part of a machine is manufactured to limit gages on an interchangeable basis and then, after assembly, the complete pump, compressor, steam turbine or gear is tested under operating conditions to make sure that performance guarantees are met and that the unit is mechanically perfect.

Following the test, the machine is taken down and the parts carefully scrutinized and gaged again, in order to detect any deviation from normal. This practice and policy insures that the purchaser will in every instance receive a correctly built and perfectly operating machine.

M-30

De Laval STEAM TURBINE CO.
TRENTON 2, N.J.

MANUFACTURERS OF TURBINES . . . STEAM, HYDRAULIC; PUMPS . . . CENTRIFUGAL, CLOGLESS, ROTARY DISPLACEMENT, MOTOR-MOUNTED, MIXED-FLOW, PROPELLER; PRIMING SYSTEMS; CENTRIFUGAL BLOWERS and COMPRESSORS; GEARS . . . WORM, HELICAL, and FLEXIBLE COUPLINGS

(*Continued from page 56*)

The synthetic rubber plant now in operation here can produce 90,000 long tons of Buna S rubber, enough to make about 16,000,000 passenger car tires.

Water is an important part of the manufacturing process for this vital commodity. The municipal Water Bureau was asked to provide a water supply equivalent to the amount needed for a city of 90,000 persons. This service was provided.

To handle the electric power service for synthetic rubber, the municipal Power Bureau installed a special industrial station on the plant grounds.

Hailed as the greatest industrial project in the city's history, the total investment in the several plants necessary for the complete processing of synthetic rubber amounts to $55,000,000. Financing was supplied by the Reconstruction Finance Corporation, through its Defense Plant Corporation, which owns and supervises the plants.

Rubber made in these installations is for the Rubber Reserve Company, under joint production management by the Goodyear Tire and Rubber Company and the United States Rubber Company, through a newly formed company known as the California Synthetic Rubber Corporation.

The finished product is made in a polymerization plant, using butadiene and styrene produced in other local plants. These are the principal raw materials needed for synthetic rubber.

In addition to these two major war industries, the Department of Water and Power serves all other war industries in Los Angeles.

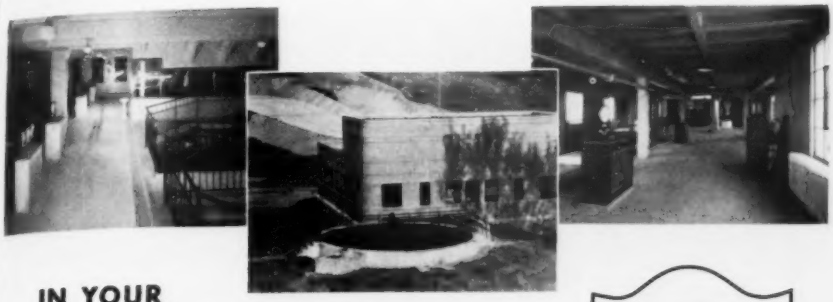
The men and women who build and operate the city's water and electric systems are an indispensable part of the war production program.

They cannot win an "E" award because utilities are not recognized for this honor but the service they provide is essential to every plant here that has won its "E."

New American Standards, announced on September 1, are available at the prices indicated, from the American Standards Association, 29 West 39th St., New York 18, N.Y. Those of likely interest to the water works field are:

A37.3–1943	Determination of Bitumen, Method of Test for (ASTM D4–42)	.25
A37.8–1943	Sieve Analysis of Fine and Coarse Aggregates, Method of Test for (ASTM C136–39)	.25
A37.10–1943	Softening Point of Bituminous Materials, Ring-and-Ball Method, Method of Test for (ASTM D36–26)	.25
A40.4–1942	Air Gaps in Plumbing Systems (combined with following)	
A40.6–1943	Backflow Preventers in Plumbing Systems (published in one pamphlet with the preceding document)	.45

(*Continued on page 60*)



IN YOUR POST WAR PLANNING

Remember—

The INFILCO Equipped Water Purification Plant CENTRALIZES EQUIPMENT RESPONSIBILITY AND ASSURES COORDINATED RESULTS

You are invited to make use of the experience gained by Infilco during the 40-odd years of designing and manufacturing every type and size of water purification equipment.

In furnishing everything required for water conditioning—from Accelators to Zeolites—Infilco offers you the important advantage of undivided responsibility for successful equipment operation.

And—your plant will be in step with modern developments, because Infilco has always been the first to introduce and adopt worthwhile improvements, as well as first to discard anything proving to be a hindrance to progress.

The services of its staff of experienced engineers and laboratory facilities are at your disposal for the asking.

INFILCO
INCORPORATED
325 W. 25TH PLACE • CHICAGO, ILL.

INFILCO
PRODUCTS

Accelators
Aerators
Automatic Controls
Chemical Feeders
Clarifiers
Coagulators
Digesters
Dosing Siphons
Filter Equipment
Flow Controllers
Flow Gauges
Fluorex Purifiers
Gravity Filters
Hydraulic Controls
Hydraulic Switches
Hydrodarco Purifiers
Level Controls
Lime Slakers
Loss of Head Gauges
Mixing Equipment
Pressure Filters
Proportioners
Recarbonators
Rotary Distributors
Samplers
Settlers
Sewage Activators
Sewage Equipment
Sewage Griductors
Venturi Tubes
Wagner Underdrains
Water Filters
Water Softeners
Zeolites

(*Continued from page 58*)

A40.5–1943	Threaded Cast-Iron Pipe Flanges and Flanged Fittings.	.25
B16al–1943	Pressure Ratings for Cast-Iron Pipe Flanges and Flanged Fittings, Class 125 (Revision of Par. 1, "Pressure Rating," and Par. 3, "Marking," on p. 3 of American Standard B16a–1939) (American War Standard)	.10
C87–1943	Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses. Specifications for (ASTM A120–42)	.25
Z10.4–1943	Letter Symbols for Heat and Thermodynamics Including Heat Flow	.55
Z15.3–1943	Engineering and Scientific Graphs for Publications	.75
Z32.1–1942	Graphical Symbols for Use on Drawings in Welding and Instructions for Their Use	.25
Z32.3–1943	Graphical Symbols for Power, Control and Measurement (Revision of Z10g2–1933—AIEE 17g3 and 17g6)	.40
Z32.5–1942	Graphical Symbols for Telephone, Telegraph and Radio Use (Revision of Z10g3–1933 and Z10g6–1929—AIEE 17g3 and 17g6)	.30
Z32.9–1943	Graphical Electrical Symbols for Architectural Plans (Revision of C10–1924—AIEE 42)	.20
Z39.1–1943	Reference Data and Arrangement of Periodicals (Revision of Z29.1–1935)	.20
Z41.6–1943	Men's Foundry (Molders) Shoes (five American War Standards for Men's Safety Shoes published in one pamphlet)	.40

A "Water Economy Campaign" has been conducted in Britain for the past year. This is similar in many ways to the "Conservation Program for Water Utilities" described by the Office of War Utilities release published in the text of this issue of the JOURNAL. The success of the campaign is reported in the May–June 1943 *Official Circular* of the British Waterworks Assn. After describing in detail the planning of the campaign and its announcement to the British water works field, it says:

"The success of the campaign can be judged by the saving in water effected all over the country. From a survey taken in December, 1942, from a cross-section of the larger undertakings from every part of Great Britain it appeared that the average saving in water amounted to 7.21 per cent, which, having regard to the lateness of the season, August, in which the campaign was necessarily started, was very good. It is of interest, too, to note that the saving of water also effected a saving of fuel by pumping undertakings of from 7 to 10 per cent."

NEWS OF THE FIELD

Rumors Take Many Forms: A recent experience in a large American city deserves mention here to show how fifth-column activities may take the form of spreading rumors about the safety of the water supply. Late one August afternoon (about half-past five), the telephones of a certain water department were jammed with calls inquiring what was wrong with the water. It shortly developed that a rumor was spreading about the city that a radio flash had gone out saying that the city water was poisoned and should not be used. Calls continued to come into the water department at a high rate until 9:30 P.M. Later, review indicated that the telephone company had had an unprecedented number of home-to-home calls which probably were related to the rumor and serving to spread it further.

As soon as the head of the water department learned of the situation, he appealed to the local radio stations to carry flash denials of the rumor. They co-operated fully. The newspapers carried statements refuting the story the next day. The local police and the FBI took a hand in the investigation. It was found, on later investigation, that almost three-fourths of the calls were incorrectly identified—that is, the person who called the water department on the telephone and asked about the story gave either a false name or false address in three out of four instances. Enough for the details of this event.

What does it mean to every other water works manager? Simply that it can happen to him and in his city. What shall he do to prepare for it? His first move, after reading this account, must be to put it into his own words and tell it to the police chief, the editors of all newspapers, the managers of local radio stations, the manager of the telephone company, the health officer—and to every responsible employee in his department.

If the water works manager is not already prepared to handle such inquiries according to a clearly slated routine, he should arrange it. Every telephone about his plant, as well as at the homes of his key employees, should have beside it an *inquiry* or *complaint* blank. The word "inquiry" is better because consumers can and do ask many questions that are not complaints. These blanks should have space on them for: (1) the consumer's name, (2) address, and (3) nature of inquiry. Before any comment is given about (3), both (1) and (2) should be recorded carefully. A routine related to such inquiries will naturally bring them to *one* desk in the water utility in due time.

(Continued on page 2)

(*Continued from page 1*)

But this rumor danger cannot wait for routine. All department employees should be schooled to move fast when a "poisoned water" rumor starts. The manager or his assistant must be advised at once so that the telephone company, the police, and the radio and newspapers executives can help in getting it under control. It will not be easy, because customers have a habit of blocking department phones with incoming calls whenever pressure drops or some other strange thing leads them to inquire. Rumor spreading of this sort can be expected to increase as the war goes on. No water works executive can justly say for one minute—it can't happen here! It can happen, and he will be a dullard who does not set his personnel in order against the day when it happens in his city.

Maj. Lloyd K. Clark, former Director of the N.D. State Dept. of Health Div. of San. Eng., has received a citation of commendation from Maj. Gen. Norman T. Kirk, Surgeon General of the U.S. Army. The citation was made to Maj. Clark for his development of a kit for determining the chlorine content of water, his kit weighing a few ounces compared with those of several pounds, previously in use.

The kit consists of a glass vial with a smaller vial enclosed in it, and contains ortho-tolidine tablets. The outside glass vial, yellow about half way down and white at the bottom, is filled with water up to the yellow strip, then one of the tablets is dropped into the water which turns various colors, depending on the amount of chlorine it contains. If the water turns the same color as the yellow part of the container it is fit to drink. If it turns orange it is over-chlorinated. If it is lighter than the yellow band more calcium hypochlorite is added.

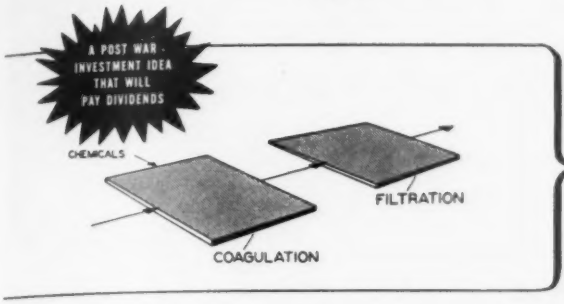
In a memorandum from Col. W. A. Hardenberg of the U.S. Sanitary Corps to General Simmons regarding development of the kit, Col. Hardenberg said:

"The memorandum prepared for you on the above [development of ortho-tolidine tablets] subject was intended to be a general résumé of the staff and research work necessary in the process of development. It did not seem desirable in a memorandum meant to be historical, to say that the successful completion was the result of the efforts and resourcefulness of one man—Major Lloyd K. Clark. To my mind the whole credit is his—for recognizing the need, initiating the research, and sticking to it until a technical conclusion was reached, despite the many technical and other problems that had to be overcome."

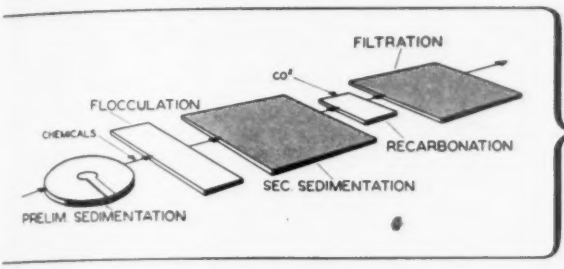
"Conserve Critical Resources" was a U.S. Information Program broadcast in mid-September by Donald M. Nelson, WPB Director, Joseph B. Eastman, Director of the Office of Defense Transportation, and by Abe Fortas, Undersecretary of the Interior, speaking for Secretary Ickes. This broadcast tied in directly with the water conservation program an-

(*Continued on page 4*)

Need Softer Water?



1926
Coagulation—at 2.33¢ per thousand gallons treated



1943
Softening—at 2.32¢ per thousand gallons treated

HERE'S HOW ONE TOWN MODERNIZED WITH DORR EQUIPMENT—AND SAVED!

BACK in 1926, the Filtration plant of Bismarck, North Dakota consisted of coagulation in a plain basin prior to filtration. At that time, treatment seemed adequate and the cost of 2.33¢ per thousand gallons reasonable. In time, however, increased pumpage due to a growing population made expansion necessary—and a Dorr Clarifier and Dorrco Flocculator were added ahead of the settling basin. Later still the application of lime slaking, soda ash and recarbonation effected even more complete softening.

Today, the softening plant resulting from these changes actually produces a soft water at a cost of 2.32¢ per thousand gallons treated—and saves the 16,000 inhabitants of Bismarck an estimated $8,000 yearly in soap as well. Bismarck's changeover is only one of the many instances where Dorr equipment has been the key to better water and actual dollar savings. If you are considering expanding your present plant, we would be glad to help you.

Now is the time to plan for tomorrow.

THE DORR COMPANY

ENGINEERS ▪ 570 LEXINGTON AVE. ▪ NEW YORK

Atlanta Toronto Chicago Denver Los Angeles

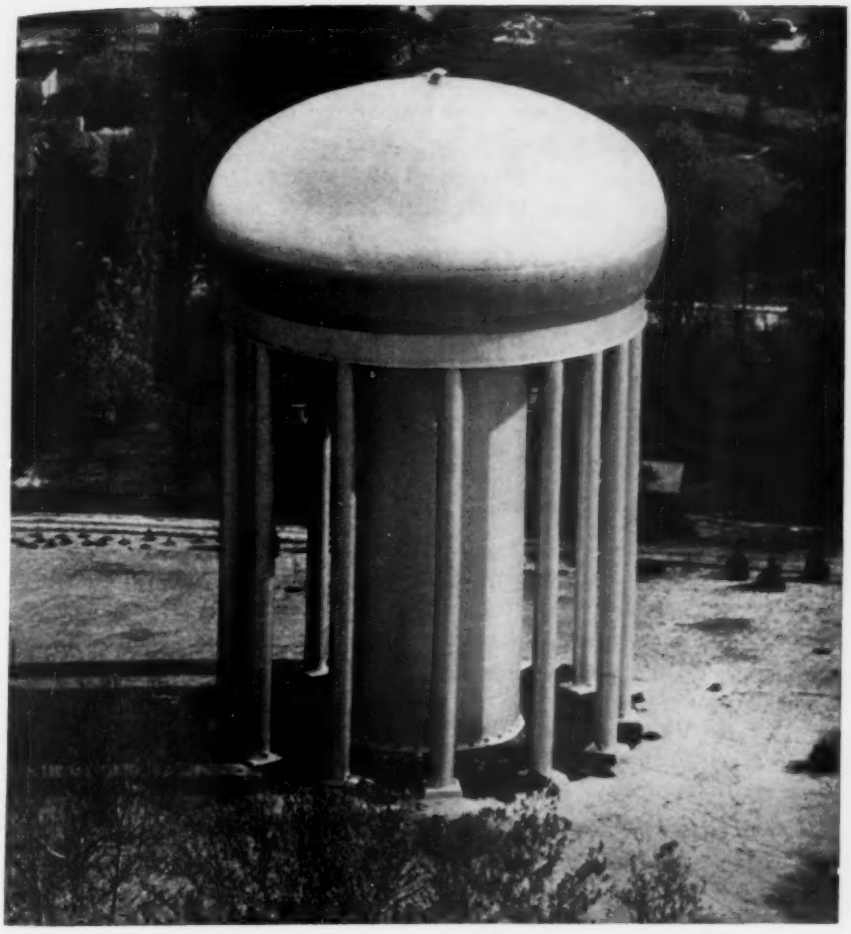
(*Continued from page 2*)

nounced in the September JOURNAL, p. 1249. If local water utilities are interested in having this broadcast put on the air locally in connection with their water conservation programs, they should request such through the OWI Stations Relations Regional Chief in their territory. These are:

OWI Station Relations Regional Offices

Territory	*Regional Chief*
Georgia, Florida, Alabama, Tennessee, Mississippi	Willett Kempton, 1729 Candler Bldg., Atlanta Tel: Walnut 4121
Maine, New Hampshire, Vermont, Connecticut, Massachusetts, Rhode Island	Walter Hacket, 17 Court St., Boston Tel: Lafayette 7500, Ext. 204–205 Evenings: Lafayette 7503
Illinois, Wisconsin, Iowa, Indiana	Mrs. Lavinia Schwartz, Suite 905, 75 E. Wacker Drive, Chicago Tel: Andover 5727
Ohio, Kentucky, West Virginia, Michigan	Alfred H. Llewelyn, 729 Union Bank of Commerce Bldg. Cleveland Tel: Cherry 7913
Texas, Oklahoma, Louisiana	David Russell, 1031 Mercantile Bank Bldg., Dallas Tel: Riverside 5711, Ext. M100–1–2–3–4
Colorado, Wyoming, New Mexico, Utah, Idaho, Montana	William H. Welsh Jr., 717 Kittredge Bldg., Denver Tel: Tabor 3173
Missouri, Nebraska, Kansas, Arkansas	Marvin McAlister, Mutual Bldg., Kansas City, Mo. Tel: Harrison 6464
Minnesota, North Dakota, South Dakota	Hayle S. Cavanor, 205 Midland Bank Bldg., Minneapolis Tel: Main 3244; Nestor 4518 Evenings: 5032
New York, New Jersey	Harry Levin, c/o OWI Office, 280 Madison Ave., New York Tel: Murray Hill 3–6800, Ext: 284–285 Evenings: Murray Hill 3–6828
Pennsylvania, Delaware, Maryland	Broughton Tall, Stephen Girard Bldg., 21 S. 12th St., Philadelphia Tel: Rittenhouse 9420
Virginia, North Carolina, South Carolina	Benjamin W. Huffington, 19 North 7th St., Richmond Tel: 7–1841
California, Oregon, Nevada, Arizona, Washington	Luther Keplinger, Western Merchandise Mart, 1355 Market St., San Francisco Tel: Klondike 2–2300

(*Continued on page 6*)



A Functional . . . . and Pleasing . . . . Design

Hortonspheroids have been used extensively in the oil industry since 1928. They are designed so that some of the stresses in the shell are transmitted to the roof and bottom plates. This reduces the necessary thickness of the plates and, subsequently, the total weight of the structure. The above view shows an elevated spheroid at Jonesboro, Ark., storing 1 million gals. of water in the main body of the tank and another 1/2 million gals. in the standpipe used as a riser.

CHICAGO BRIDGE & IRON COMPANY

BIRMINGHAM CHICAGO WASHINGTON
PHILADELPHIA NEW YORK TULSA
SAN FRANCISCO HOUSTON CLEVELAND

(*Continued from page 4*)

Col. Arthur C. Everham, Director of Public Works for Kansas City, Mo., was killed recently in an automobile accident. Kenneth K. King, Director of the Water Dept., was transferred to the post of Director of Public Works, as of August 1, and Melvin P. Hatcher, Chief Engr. & Supt., was promoted to Director of the Water Dept., replacing King. William T. Bailey, Asst. Chief Engr. & Supt., was made Chief Engr. & Supt.

C. T. Kaiser, formerly Supt. of Filtration, Water Works Dept., Newark, Ohio, is now serving as San. Engr., Repairs & Utilities Branch, 4th Service Command, Atlanta, Ga.

Maj. Ross A. Thuma, formerly on duty with the Corps of Engineers at Omaha, Neb., is now at the Post Engineer's Office at Fort Des Moines, Iowa. Before military service he was Supt. of the Filtration Plant at St. Paul.

Anselmo F. Dappert, until recently Principal San. Engr. of the New York State Dept. of Health, with headquarters at Albany, N.Y., has been commissioned as Major and is now temporarily stationed at the School for Military Government at Charlottesville, Va.

C. R. Velzy is now Resident Engr. for Greeley & Hansen at their New York Office—299 Broadway. His present assignment is report and design on New York City's Hunts Point Sewage Treatment Works. Before coming to New York, he was Resident Engr. for Greeley

(*Continued on page 8*)

Henry A. Gallagher, Mgr. of the Independence, Mo., Water Co., died at Independence on August 27. He was born in 1880 in Rockford, Ill., where he entered the water works field in the late Nineties as water boy under his father who was the foreman for construction of distribution lines for Rockford. In 1903, he was Supt. of the Plattsburg, Ill., Water and Gas Depts. and in 1905, he was Supt. of the Washington, Ind., water works.

In 1908 he was chosen by Eastern capital to supervise a company known as the Inter-Urban Water Co., located between Kansas City, Mo., and Independence, Mo. Later the Independence, Mo., water works was acquired and both companies consolidated.

Sometime in the interim he served as secretary of the Southwest Section of the A.W.W.A. This was before the formation of the Missouri Valley Section. He missed few meetings and annual conventions during his 33 years as an Active Member of the A.W.W.A.

They Save With

IN THE THEATRES OF WAR PRODUCTION

FERRI-FLOC

Saves Money **Saves Man-Hours**

Through the efficient part it plays in the manufacture of:

Shell-Casings

Synthetic Rubber

Foam Fire-Fighters
for use aboard ships

Insulating Board
for ships and barracks

Mineral Pigments
for paint and camouflage

Through its important role in:

Boiler Feed-Water Treatment in War Plants
Water Purification in Army, Naval and Air Bases
Sewage Treatment in Army, Naval and Air Bases

Yet to all users on the HOME-FRONT, FERRI-FLOC is still available without priorities.

We salute Tennessee Copper Company, source of our raw materials, for their untiring efforts which have permitted our other plants to carry on at full capacity; and we share their pride in their recent award of the Army and Navy E.

TENNESSEE CORPORATION ATLANTA, GEORGIA
LOCKLAND, OHIO

(*Continued from page 6*)

& Hansen at Norfolk, Va., for ten months. In 1941–42 he spent part of his time as Consultant in San. Eng. with the Quartermaster and U.S. Engineers, while from 1938 to 1942 he was Supt. of Buffalo's Sewage Treatment Plant, having taken that position after service at Buffalo as Resident Engr. for Greeley & Hansen.

H. P. Powell, Supt. of the Griffin, Ga., Light, Water & Sewerage Dept., retired this summer after 21 years of service in that capacity. Under his leadership and direction, notable improvements were made in all branches of the Department. The electric system has grown from a small day-load to a system which now serves 4500 customers who purchase about a million kilowatthours per month. The water system has grown from a small steam pumping plant and wells to a modern 4-mgd. filter plant, getting its water from the Flint River about nine miles away. The sewerage system has also grown by leaps and bounds until it now has two modern sewage disposal plants with many miles of sanitary sewer lines.

W. G. Bryant, Supt., succeeding Mr. Powell, came to Griffin from Canton, Ga., where he was Dist. Engr. for the Georgia Power Co., with whom he had served for six years. Previous to that time, he had been a mechanical drawing and related science Instructor in a Vocational School for boys at Knoxville, Tenn. He studied at the Univ. of Tennessee College of Engineering and there under the co-op plan worked for the Tennessee Public Service Co. in Knoxville. The Univ. of Tennessee graduated him with a B.S. degree in 1934.

Wm. H. Roberts resigned from the position of Commissioner of Public Works in Rochester, N.Y., on August 6, to accept an appointment on the same date as Chairman of the New York State Dept. of Labor Board of Standards and Appeals.

His first position with the City of Rochester was in 1914 when he was associated with the Department of Engineering on additional water

(*Continued on page 10*)

E. H. Herbert, Supt. of the Norfolk, Va., Div. of Water, died recently after an illness of about two weeks and a major operation. He was 65.

He began work with the Norfolk Water Div. in 1907. Even before the immense difficulties and trials which be-set the men serving Norfolk with water in the recent war years, he had a full measure of difficulties with the extreme drought which dried up Norfolk's water supply in the late Twenties.

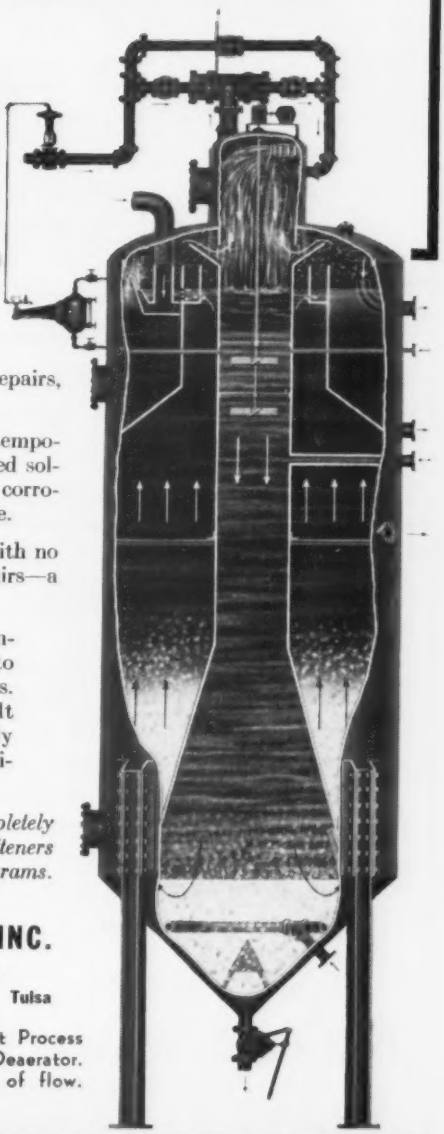
R. W. Fitzgerald has been appointed Supt., to fill the position left open by Mr. Herbert's death.

Complete Protection Against BOILER CORROSION

with

GRAVER

HOT PROCESS WATER SOFTENER and DEAERATOR



With the Graver Hot Process Water Softener and Deaerator, complete protection against delays and costly repairs, due to scale and corrosion, is afforded.

This equipment not only removes temporary and permanent hardness, suspended solids, and silica, but eliminates all such corrosive gases as oxygen and carbon dioxide.

Result—year 'round boiler service with no time out for scale removal and repairs—a definite saving of time and money.

Graver designs and builds water conditioning equipment of all types to meet the most rigid requirements. Whatever your problem, consult Graver. Our engineers will gladly submit recommendations and estimates without obligation.

Write for 24-page bulletin No. 314 completely describing Graver Hot Process Water Softeners and containing important charts and diagrams.

GRAVER TANK & MFG. CO., INC.

4809-45 Tod Ave., East Chicago, Ind.

New York Catasauqua, Pa. Chicago Tulsa

Cross-section of Graver Hot Process Water Softener with internal Deaerator. Arrows indicate direction of flow.

GRAVER *Water Conditioning Equipment*

43-20-W

(*Continued from page 8*)

supply. At that time, a new 37-in. water main from Hemlock Lake to the city, a distance of about thirty miles was being installed. In 1916, he was appointed Asst. City Engr., which position he held until January 1, 1938, when he was appointed Commissioner of Public Works.

Most of his work was in connection with heavy construction, having been in charge of the building of four of the city's large river bridges, the deepening of the Genesee River through the city, several miles of deep tunnel sewers, plans and surveys for additional water supply and the construction of the Subway Railroad, a project on which the City of Rochester expended more than twelve million dollars.

Ensign Kathleen F. Lux is reported in *Civil Engineering* for October as the first woman to have a commission in the Civil Engineer Corps. She joined the Waves earlier this year, after serving with the Indiana State Board of Health as Asst. San. Engr. She was graduated from Purdue University in 1942.

W. H. Carper, formerly Town Mgr., Culpeper, Va., is now City Mgr. at Clifton Forge, Va.

(*Continued on page 12*)

SAVE FOR VICTORY

EVERYWHERE Americans are being asked to "SAVE FOR VICTORY." Water works superintendents, engineers and public officials can do more in this connection by investigating the National Method of water main cleaning. This method restores the carrying capacity of pipe to at least 95 per cent of that of new mains, thereby eliminating the necessity for purchase of new mains. Aside from this the National Method makes possible lower pumping costs, greater delivery, reduced insurance rates and clean water.

Now is the time to do your part—SAVE FOR VICTORY

National Water Main Cleaning Co.

30 Church St., New York, N. Y.

BRANCHES

115 Peterboro St., Boston, Mass.
910 William Oliver Bldg., Atlanta, Ga.
7103 Dale Ave., St. Louis, Mo.
576 Wall St., Winnipeg, Man., Canada
3812 Castellar St., Omaha, Neb.
205 West Wacker Drive, Chicago, Ill.
501 Howard St., San Francisco, Calif.
2028 Union Ave., Montreal, Canada

CLOUDS OF BACTERIA-LADEN DUST ENDANGERED THE WATER SUPPLY!

On a rush job enlarging a state airport, tractors, trucks, shovels and graders were working 16 hours a day—during the worst drought in the history of the community. As a consequence, thick clouds of bacteria-laden dust drifted almost constantly over two nearby reservoirs, increasing the bacteria count.

The water works engineer proved equal to the situation. He began at once devising means of getting Per*chlor*on into action. Per*chlor*on is a super-test calcium hypochlorite that provides an excellent stand-by source of chlorine. It dissolves readily, is unusually stable and has more than 70% available chlorine. Per*chlor*on has performed vital service in many water supply emergencies.

In the case in question, here is how Per*chlor*on was used. A 1½-ton truck, carrying an air compressor, pump, wooden barrel and high pressure hose, was put into service. A mixture of one can of Per*chlor*on to a barrel of water was sprayed on the surface from the moving truck, or by a man walking along the embankment.

Per*chlor*on at the rate of two or three parts per million was sprayed on the reservoirs twice a week.

RESULT: Low bacteria count—and only three hours time consumed per application.

Per*chlor*on will serve *you* just as dependably in any situation demanding emergency sanitation. During these times much of the Per*chlor*on manufactured is, of course, going into essential wartime needs. That leaves less for our customers and you can help this situation by: *Ordering only for regular current needs—well in advance.*

Penn Salt representatives are experienced in many of the unusual problems that face water works engineers today. Call on them, without obligation, for advice and cooperation. And if you do not have your *free* copy of the valuable booklet on Per*chlor*on, write today to Dept. JAW.

Perchloron
REG. U.S. PAT. OFF.

PENNSYLVANIA SALT MANUFACTURING COMPANY
Chemicals
1000 WIDENER BUILDING, PHILADELPHIA 7, PA.
New York • Chicago • St. Louis • Pittsburgh • Minneapolis • Wyandotte • Tacoma

(*Continued from page 10*)

Chester A. Miller is now Water Supt. for Camp Ellis, Ill., where he was previously Senior Engr. of Construction in the Water Dept. before the plant was transferred to the Post Engineer from the Area Engineer of the Sixth Corps Command. He was also previously Water Plant Supt., Sherwin-Williams Defense Corp., Carbondale, Ill.

Lt. William W. Aultman, formerly Water Purif. Engr. for the Metropolitan Water Dist. of So. Calif. where he was in charge of its large softening and filtration plant, has been made Executive Officer of the Dutch Harbor, Alaska, Naval Post.

Wm. D. Bryan Jr., formerly Mgr. of the Tarboro, N.C., Water Plant, has been made a Capt. and transferred from the post as Asst. San. Inspector, Camp Adair, Ore. He is now with a malaria control unit overseas.

"Water Supply and Treatment," by C. P. Hoover, has been brought out in the 5th edition by the National Lime Assn., 927 Fifteenth St., N.W., Washington, D.C. Many revisions have been made, much new material has been added, more modern illustrations and drawings have been substituted, and there are several color plates.

Due to the increased cost of preparing and producing this book, the National Lime Assn. has revised its previous policy of distributing practically unlimited numbers of the book free of charge. It will, however, continue to send one free copy to all individuals, companies, institutions, service camps, etc., directly identified with the treatment of water. In quantity lots, copies will be made available to commercial firms, governmental units, etc., at 65 cents each, and also in quantity lots for students' use at 50 cents each.

Since its first issuance in 1934, 26,000 copies have been distributed.

(*Continued on page 14*)

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Back the Attack

WITH WAR BONDS

STUART-BRUMLEY CORP., 516 N. CHARLES ST., BALTIMORE-1, MD.

STUART-BRUMLEY

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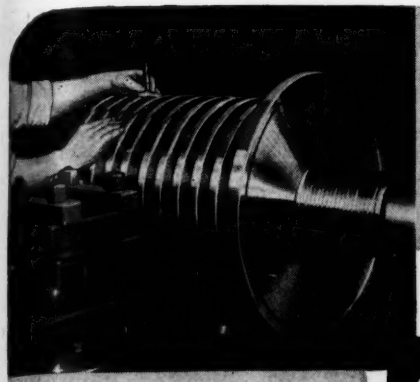
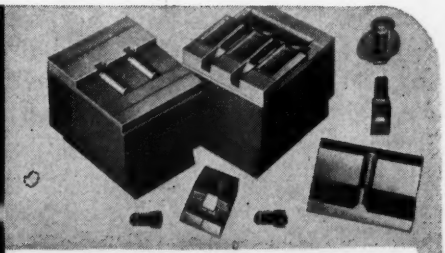
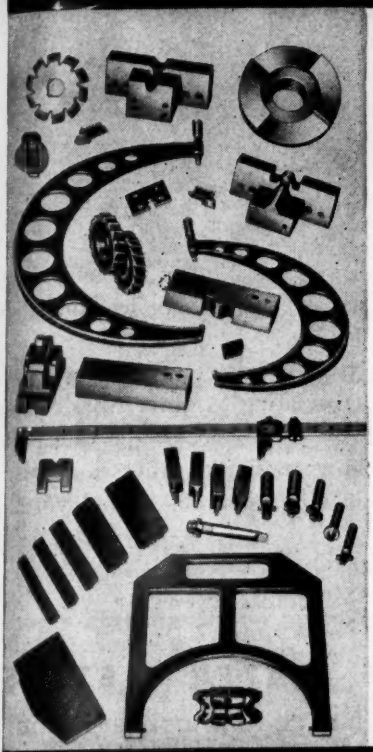




Special tools, gages, jigs and templates used in the production of the integral steam turbine rotor shown.



A Manufacturing Policy
THAT HAS STOOD THE
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From its inception in 1901, the De Laval Steam Turbine Company has recognized that the best results are obtainable only by confining the work of its staff to the development, design and production of a single class of manufacture, having the same general characteristics and requiring the same processes and high grade of workmanship. Consequently the efforts of the company have been confined to high-speed rotary power equipment, including STEAM TURBINES, HELICAL and WORM SPEED REDUCING GEARS, CENTRIFUGAL PUMPS and COMPRESSORS and ROTARY OIL PUMPS.

The jigs, tools and gages required for the production of high-grade work are much more expensive and elaborate than are those necessary for work requiring less refinement and care in manufacture. Also, the type of shop employee who can perform this accurate work is entirely different from that required for less particular and accurate classes of work.

M-29

De Laval STEAM TURBINE CO.
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MANUFACTURERS OF TURBINES . . STEAM, HYDRAULIC PUMPS . . CENTRIFUGAL CLOGLESS ROTARY DISPLACEMENT MOTOR MOUNTED, MIXED FLOW PROPELLER PRIMING SYSTEMS, CENTRIFUGAL BLOWERS and COMPRESSORS, GEARS WORM, HELICAL and FLEXIBLE COUPLINGS

(*Continued from page 12*)

REPORT OF WESTERN PENNSYLVANIA MEETING

The Joint Meeting of the Western Pennsylvania Section of the A.W.W.A. and the Western Pennsylvania Water Works Operator's Assn. was held at the Roosevelt Hotel in Pittsburgh, on September 22 and 23. We registered 162 men and at least 15 arrived late in the afternoon of September 23 and were not registered. There were approximately 20 ladies present for the social gathering and the banquet. On Wednesday evening, September 22, a get-together of early arrivals was held and there were approximately 70 people present for this little meeting. Those present were able to meet old friends and discuss their present day problems.

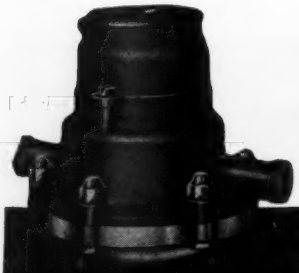
On Thursday morning the meeting was honored by Mayor Cornelius D. Scully, Mayor of the City of Pittsburgh, who congratulated the water works men on the fine manner in which they were able to maintain production of water to meet the wartime needs. He also discussed the present City of Pittsburgh water supply system, pointing out that better sources of water were available and could be secured for Pittsburgh if the proper effort is put forth.

The paper presented by E. L. Filby, Field Director for the Committee on Water and Sewage Works Development, was very well received by the meeting and from conversations which later developed, I believe the water works profession in this area was given an idea as to their responsibility after the war, in the development of adequate water supplies and the necessity for keeping business on an even keel.

John H. Murdoch Jr., President of the Pennsylvania Water Works Assn., delivered a fine address at the banquet, relating to water works jobs for the duration of the war and the future. He emphasized the thoughts brought out in Mr. Filby's address—that the water works profession must do its part to insure jobs with adequate pay and continual employment after the war.

(*Continued on page 16*)

NIAGARA IRON CASE WATER METERS



provide wartime copper conservation plus the time-proved Niagara design. They comply with victory-meter limitations. Works are interchangeable with American Bronze Case Meters.

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BUFFALO METER COMPANY
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"Mr. Commissioner!

What are you planning for our post-war city?"

THE share of *your* citizens in that better post-war world depends largely on you. Are you planning the public improvements they'll expect? For instance, a good water supply—soft and sparkling? Few communities will want to put up with hard water after the war—and no community needs to!

Water conditioning for municipalities has been highly developed by Permutit*. Hundreds of progressive cities enjoyed Permutit-conditioned water before the war. Recently-designed equipment makes it more practical and economical than ever.

Take the first step toward a brighter future for your city. Get the facts *now*. Just drop a line to The Permutit Company, Dept. C2, 330 West 42nd Street, New York 18, N. Y. In Canada: Permutit Company of Canada, Ltd., Montreal.

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PERMUTIT

WATER CONDITIONING HEADQUARTERS

BETTER WATER MEANS HAPPIER CITIES—

Plan it now for your community!

(*Continued from page 14*)

The paper delivered by M. L. LeBosquet Jr., U.S.P.H.S. Senior Public Health Engr., Cincinnati, Ohio, on "Acid Mine Drainage Studies of the Ohio River Pollution Survey" also was of considerable interest to water works men in our area. The discussion by Chas. A. Finley, Cons. Engr. of Pittsburgh, and Chas. H. Young, District Engr., Pennsylvania Department of Health, Meadville, Pa., brought out the main point: that mine sealing should not be given all of the credit for general cleaning up of streams, inasmuch as flood control dams, sanitary sewer systems and other general improvements have also helped effect better stream conditions, and are a part of the subject to be considered. Mr. LeBosquet indicated that the first element to start the improvement of streams was liable to get most of the credit and agreed that flood control dams and sewage systems would all greatly add to the final solution of the problem.

The round table discussions covering the conservation program and methods of controlling waste of water were very excellent and very well received. The speakers as outlined in the program gave very interesting talks. The most interesting, perhaps, was brought out in the discussion during the Symposium on "Wartime Operation of Water Works" which was lead by P. C. Morrow, Div. Mgr., American Water Works & Electric

(*Continued on page 18*)

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Hand Operated--sizes 2", 2½", 3", 4"
Power Operated--sizes 3" and 4"
Open Discharge or Force Pump
Skid, Truck or Trailer Mounted
COMPLETE PUMP OUTFITS
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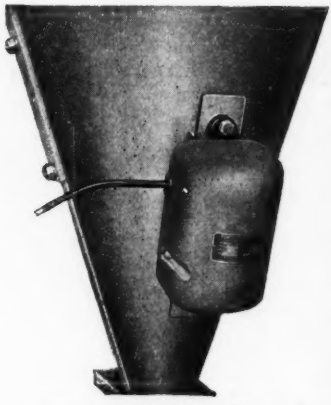
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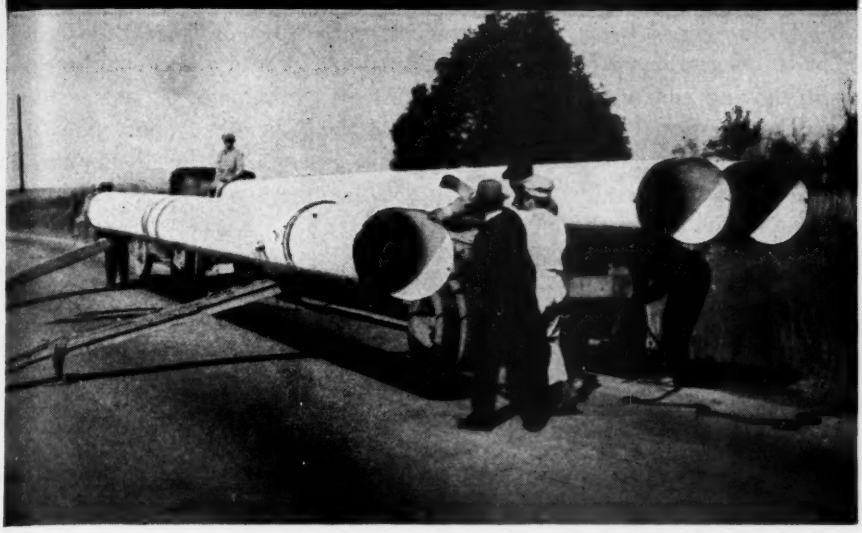
Flow chemicals freely through Bins, Hoppers and Chutes
Catalog information available
SYNTRON CO. 428 Lexington Ave. Homer City, Pa.

Steel Pipe...WAR WORKER



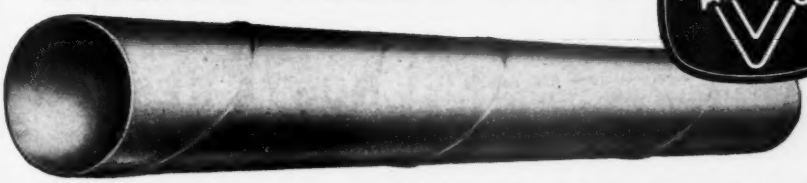
Yes, steel pipe has joined the ranks of war workers. Now ARMCO "Spiral Welded" is being used on vital war projects instead of the usual peacetime water supply and force mains.

In this new service it meets wartime standards for efficient, maintenance-free performance. Skilled labor is not needed for installation. Fifty-foot lengths mean fewer joints, less assembly work. A spun-enamel lining assures high flow capacity, prevents tuberculation and recurrent cleaning troubles. There is no danger from shattering or sudden breaks because ARMCO Pipe has an ultimate strength of 50,000 to 60,000 pounds per square inch. Sizes range from 6 to 36 inches, with wall thicknesses in any diameter to fit specific jobs.

If you can't get ARMCO Spiral Welded Steel Pipe for other than the most important war projects, remember that Victory comes first. When the war is over, ARMCO Pipe will be ready again to meet your every requirement. The American Rolling Mill Co., Pipe Sales Div., 831 Curtis St., Middletown, Ohio.

ARMCO STEEL PIPE

ARMCO



MEETS A. W. W. A. STANDARD SPECIFICATIONS

(*Continued from page 16*)

Co., New York, N.Y. This particular phase of the program indicated that the water works men were able to do a very effective job with a minimum of materials and that they were trying to maintain their plants under the trying conditions to a very efficient level.

The sessions were very well attended and Chairman Chester F. Drake is to be congratulated on the very fine manner in which he kept the program moving and unnecessary discussions at a minimum.

The Western Pennsylvania Section of the A.W.W.A. appreciates the co-operation of the Western Pennsylvania Section of the Pennsylvania Water Works Operator's Association for their help in making this meeting one of the best gatherings we have had.

The luncheon held in honor of John Needles Chester for the outstanding contribution to the water works profession over a long period of years was of considerable interest to local people. Mr. Chester gave a very interesting résumé of his life history and brought out particularly the stability of the water works business when properly handled, indicating that he was the major stockholder in three very prosperous water companies.

The Resolutions Committee took cognizance of the death of Robert

(*Continued on page 20*)

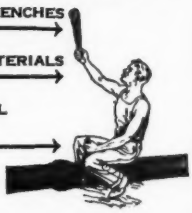
3 *Money, Time and Labor Saving Features of*

UNIVERSAL CAST IRON PIPE

LAID WITH ONLY WRENCHES

NO CAULKING MATERIALS

NO GASKETS. NO BELL HOLES TO DIG.



For water supply, fire protection systems, sewage disposal systems, industrial, and irrigation. Flexible.

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THE CENTRAL FOUNDRY COMPANY
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Gentlemen: Send us information and catalog on UNIVERSAL CAST IRON PIPE.

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Prevent Rusting

Rusta Restor cathodic protection, provides *permanent protection* against rusting of water tanks, piping and steel structures of all kinds.

Initial cost of a complete equipment is about equal to the cost of a good paint job. . . . Operation costs only about 2 mills (i. e. $0.002) per year per square foot of surface protected.

If your tanks and steel structures are not now protected by this proven low-cost method, they should be. No obligation. Send for fully descriptive literature today.

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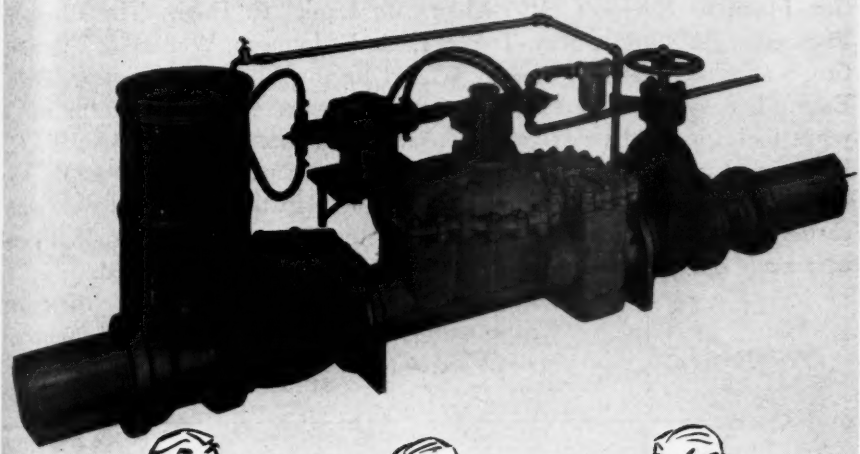
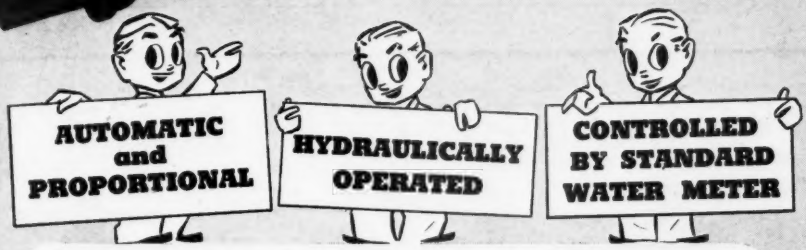
HIGH PRESSURE

Chem-O-Feeder





DESCRIPTION: Hydraulically operated utilizing water power from main to inject against line pressures up to 175 lbs. per square inch, feeds in strict proportion to variable flow through mechanical disc, turbine, propeller or other type meters using only 5 times amount reagent fed daily for operating purposes. Meter accuracy not affected. Only two connections to main, no balancing water pressure required for operation of this plunger pump. Later installations of additional feeders for other chemicals using same control meter easily handled. Chem-O-Feeders may be located out of meter pit at convenient working level with remote control piping.

USES: In addition to chlorination of variable flow water systems, Automatic & Proportional High Pressure Chem-O-Feeder is used to feed:

ACTIVATED ALUM	LIME SLURRY
ALUM	SODIUM ALUMINATE
BLACK ALUM	CAUSTIC
SODA ASH	FERRIC CHLORIDE
FERROUS SULPHATE	SULPHURIC ACID
FERRIC SULPHATE	AQUA AMMONIA
CALGON	ALUMINUM SULPHATE, ETC.

%PROPORTIONEERS, INC.%

"Chemical Feeder Headquarters"

WRITE TO 61 CODDING ST., PROVIDENCE, RHODE ISLAND

(*Continued from page 18*)

Spurr Weston, well known Cons. Engr. of Boston, Mass., who was to have been one of the principal speakers at our meeting: "Mr. Weston was a pioneer in developing modern water treatment practices in the now famous rapid sand filtration experiments at Louisville, Ky., and during the years since had continued to be an authority and a leader in his chosen field."

The officers elected were: Chairman, Edw. C. Trax, Chemist, Filtration Plant, McKeesport; Vice-Chairman, Daniel E. Davis, The Chester Engineers, Pittsburgh; Secy.-Treas., Earle P. Johnson, Wallace & Tiernan Co., Station 13, Pittsburgh; A.W.W.A. Director, Charles H. Young, Dist. Engr., Pennsylvania Dept. of Health, Meadville, Pa. (for a term of 3 years to begin at the next annual A.W.W.A. meeting); Trustee, T. C. Braman, Citizens Water Co., Washington (for a period of 3 years).

The officers of both our associations wish to thank all of those who participated in making a success of our meeting, and particularly those who made our program one of the finest we have ever presented.

EARLE P. JOHNSON
Secretary-Treasurer

(*Continued on page 36*)

"BLUEPRINT NOW"

At present, all of us are "all-out" for the war effort.

When peace comes we must also go "all-out" to provide jobs—and at the same time put over that vitally needed project.

If we plan *now*, we'll be ready *then*.

RENSSELAER VALVE CO.
TROY, N. Y.

COMPLETE SELECTION in Socket Fittings!

Sleeve (Solid)
Fig. 521

Plug
Fig. 523

Flanged Socket
Fig. 528

Cap
Fig. 524

Every type of socket fitting needed for water works construction and maintenance is included in Grinnell's line.

Special features of Grinnell Socket Fittings:

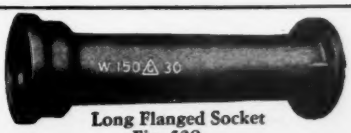
1. Improved design cuts size and weight and lessens friction losses.
2. All socket and spigot dimensions and wall thicknesses are the same as A.W.W.A. Standard Class "D" Pipe.
3. All fittings suitable for use with Super-deLavaud centrifugally cast Bell and Spigot Pipe.
4. Although listed for only 150 lbs. working pressure, suitable for 173 lbs. water pressure as specified for A.W.W.A. Class "D" Fittings.

Write for Catalog 1, "Water Works Specialties". Grinnell Co., Inc., Executive Offices, Providence, R. I. Branch warehouses in principal cities.

Split Sleeve
Fig. 522

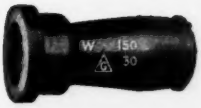
Tee
Fig. 511

Warren Coupling
Fig. 533



Long Flanged Socket
Fig. 529

Reducer
Fig. 526



Reducer
Fig. 525

Blow-off Tee
Fig. 515

Long ¼ Bend
Fig. 505

¼ Bend
Fig. 501

Tee
Fig. 514

Cross
Fig. 516

⅛ Bend
Fig. 507

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Manhole Covers

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Special Castings

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Mattoon, Illinois, U. S. A.

(*Continued from page 34*)

MEMBERS ENTERING MILITARY SERVICE

Buswell, A. M., Chief, State Water Survey Div., Urbana, Ill. (Mar. '16)★

Dappert, Anselmo F., Mayflower Apts., 6 S. Lake Ave., Albany, N.Y. (Apr. '31)★

DeWolf, A. B., Capt., Corps of Engrs., Box 4970, Jacksonville, Fla. (Jan. '40)★

Friese, John H., Asst. Engr., City of White Plains, 255 Main St., White Plains, N.Y. (Affil. Jan. '39)★

Henderlite, James H., Filtration Plant, Douglasdale Rd., Richmond, Va. (Jan. '36)★

Lux, Kathleen F. (Miss,) Asst. San. Engr., State Board of Health, 1915 E. Riverside Drive, Indianapolis, Ind. (Jr. M. Oct. '42)★

McGuire, Orla E., Designing Engr., Bureau of Eng., State Dept. of Health, Lansing, Mich. (Jan. '39)★

McEldowney, L. E., Chemist, Water Dept., Tampa, Fla. (Jan. '41)★

Pirnie, Malcolm, Capt., U.S. Public Health Service, APO No. 702, c/o Postmaster, Seattle, Wash. (Oct. '39)★

(*Continued from page 20*)

Many changes in OCD personnel were recently announced by John B. Martin, Acting Director of OCD.

Warren H. Booker, formerly Director of the Div. of Sanitation of the North Carolina State Board of Health, has been made OCD Regional San. Engr. for the Third Civilian Defense Region.

William T. Ingraham, formerly Asst. Regional San. Engr. for the Ninth Civilian Defense Region, has been promoted to Regional San. Engr., replacing Gerald E. Arnold.

Gerald E. Arnold is now assigned to the WPB and located at 1355 Market St., San Francsico, as a representative of the Water Branch of WPB's Office of War Utilities. The necessity of having such a representative has long been recognized by Water Branch Chief Arthur E. Gorman who obtained Maj. Arnold's release to the job. Maj. Arnold will have primary investigational and review jurisdiction over all water works projects in the Rocky Mountain and Pacific Coast States. He is still nominally under the U.S.P.H.S.

Amos J. Alter, formerly Asst. San. Engr. in the OCD Washington, D.C., office, has been transferred to the Ninth Civilian Defense Region as Asst. Regional San. Engr. John C. Luthin was also recently appointed

(*Continued on page 38*)

No Gold Braid, *but*...

. . . the earnest men who direct and maintain vital municipal waterworks and sewerage systems have their strategical problems, too. They must conduct their campaigns against fire, flood and epidemics—all enemies of industry and public welfare which would interrupt or slow down manpower and production. They must marshal carefully such supplies as are available. They must shift equipment, make repairs and use to the utmost advantage whatever is obtainable under priority restrictions.

Ludlow, regardless of a sincere wish to be co-operative, is limited by rulings of the War Production Board. We will gladly send you such information as we have on WPB priorities and, when you have obtained a rating, we will make shipment with all possible promptness. V-8

THE LUDLOW VALVE MFG. CO., INC.
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LUDLOW HYDRANT CONSTRUCTION: Self-releasing 30° angle wedges and free-floating gates, self-adjusting to seats, afford smooth, trouble-free performance, long service. Opening and closing of hydrant automatically opens and closes drain, located at lowest point. Clogging is prevented. Gate is wedge-locked when closed, to prevent flooding. All working parts may be lifted through top of hydrant for easy inspection. Top and bottom bodies bolted together at ground line.

LUDLOW
HYDRANTS AND VALVES
SINCE 1866

(*Continued from page 36*)

Asst. Regional San. Engr. of the Ninth Civilian Defense Region. James Westfield Jr. is the new Regional Rescue Officer for the Ninth Civilian Defense Region.

New Rescue Officer for the Third, Fourth and Eighth Civilian Defense Regions is Claude S. Young.

Hugh R. McCall, who was succeeded by Warren H. Booker as Regional San. Engr. in the Third Civilian Defense Region, is now Asst. Chief of the San. Eng. Section in the Washington, D.C., office.

Linden J. Murphy has been made Regional San. Engr. for the Seventh Civilian Defense Region.

Santitary Engineers of the Office of Civilian Defense

Region	*Name and Title*	*Address and Telephone*
Washington	C. E. McCallum, Chief San. Engr. H. R. McCall, Asst. Chief San. Engr. Charles I. Mansur, Asst. San. Engr.	Medical Div., OCD, Dupont Circle Bldg., Washington 25, D.C. REpublic 7500 Ext. 74376
I	Howard H. Potter, Reg. San. Engr.	First Civilian Defense Region, 17 Court St., Boston 8. Lafayette 7500
II	John H. Brewster, Reg. San. Engr.	Second Civilian Defense Region, 122 East 42nd St., New York 17. LExington 2–5700
III	Warren H. Booker, Reg. San. Engr.	Third Civilian Defense Region, 1555 O'Sullivan Bldg., Baltimore 2. LExington 6260
IV	D. W. Evans, Reg. San. Engr.	Fourth Civilian Defense Region, P.O. Box 1642, Atlanta 1. WAlnut 4121
V	Frank Woodbury Jones, Reg. San. Engr.	Fifth Civilian Defense Region, Medical Science Bldg., 9 Buttles Ave., Columbus 8. MAine 6371
VI	William H. Cary Jr., Reg. San. Engr.	Sixth Civilian Defense Region, Room 1429, 222 West Adams St., Chicago 6. ANdover 3600
VII	Lindon J. Murphy, Reg. San. Engr.	Seventh Civilian Defense Region, 321 City National Bank Bldg., Omaha 2. Jackson 8030
VIII	Carl E. Schwob, Reg. San. Engr. Amos J. Alter, Asst. Reg. San. Engr.	Eighth Civilian Defense Region, 8th Floor, Mercantile Bank Bldg., Dallas 2. RIverside 5711
IX	William T. Ingram, Reg. San. Engr. John C. Luthin, Asst. Reg. San. Engr.	Ninth Civilian Defense Region, 1355 Market St., San Francisco 3 KLondike 2–2300

(*Continued on page 41*)

(*Continued from page 38*)

REPORT OF ROCKY MOUNTAIN MEETING

A very successful and interesting meeting of the Rocky Mountain Section of the A.W.W.A. was held September 16–17 at the Cosmopolitan Hotel, Denver, Colo.

Water works and equipment men and guests made up a total registration of 124, who were welcomed by the Honorable John H. Vivian, Governor of Colorado, who stated that ours is a most important and vital part in the life of the community. In Colorado, the water flowing in the streams has always been treated as the property of the State of Colorado, but that attitude of some officials in Washington makes it the duty of every citizen of Colorado to exert his efforts to retain the control of this vital commodity.

Chairman H. G. Watson, City Engr., Cheyenne, Wyo., made the response to the Governor's talk.

Industrial Chemical Sales Div., through the courtesy of John Harris of Chicago, then showed a motion picture entitled "Behind the Water Tap," which was followed by some shorts taken at other A.W.W.A. meetings. Many present recognized their physiognomies and those of friends.

A group picture was then taken in front of the Hotel.

Charles Connaughton, Director of the Forest Experiment Station, Fort Collins, Colo., presented a paper on "Water Shed Management and Conservation." Experiments conducted over several years showed that planned cutting, leaving some timber in the pattern of cookies cut from dough gives a good commercial return and still gives due consideration to such important subjects as reforestation, recreation, and grazing, in addition to giving more runoff of water. More studies are being made to improve further the results for all interests concerned.

Maxwell Parshall, Asst. Prof., Experiment Station, Fort Collins, prepared the next paper which was entitled "Meteorology and Snow Surveys." He explained that precepitation is caused by large masses of air and mois-

(*Continued on page 43*)

LaMOTTE NESSLER TUBE STANDARDS FOR WATER WORKS LABORATORIES and THE LaMOTTE NESSLER TUBE COMPARATOR

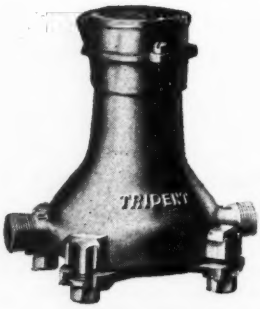
These standards are made in special sealed 50 ml. Nessler Tubes and are available for all of the standard determinations. The LaMotte Nessler Tube Comparator, illustrated at the left, was developed for the direct colorimetric comparison of these standards with the treated sample of water. The image is thrown on a reflecting mirror beneath the tubes, so that the observer does not have to change his position to make any number of observations.

Full information on the above units, as well as other LaMotte units for the water works laboratory, will be sent on request.

LaMOTTE CHEMICAL PRODUCTS COMPANY
TOWSON 4, BALTIMORE, MARYLAND

How many post-war projects can you think of that will pay?

Quite a number . . . but in the light of the revenue that it will return to the Water Company, a Meter Testing Program can easily be one of the most profitable. It will require the least amount of capital expenditure, there is plenty of experience on which to draw for information and it can be put into action quickly.



Trident representatives will be glad to help you make your plans now and, when the time comes, to assist in carrying them out. As a matter of fact, it would even pay you to get started immediately, considering that the result of the savings would definitely benefit the war effort.

NEPTUNE METER COMPANY • 50 West 50th Street • New York 20, N. Y.

Branch Offices in CHICAGO, SAN FRANCISCO, LOS ANGELES, PORTLAND, ORE., DENVER, DALLAS, KANSAS CITY, LOUISVILLE, ATLANTA, BOSTON.

75 Neptune Meters, Ltd., Long Branch, Ont., Canada

(*Continued from page 41*)

ture being cooled below the dewpoint by changes in altitude. In winter, the precipitation falls as snow, and in semi-arid regions such as this, the forecasting of stream runoff is important to aid the farmers in crop planning, and for this reason April 1 is the usual forecasting date, although forecasts made May 1 or 15 would be more accurate. Snow survey courses are usually laid out on intersecting lines in a representative portion of the area to be surveyed. Stations vary in number from 10 to 50 and are generally 25 to 50 ft. apart. Special gages, containing calcium chloride, covered with oil, are used. The gain in weight gives the depth of snow and amount of water content from which the forecasts are made by comparison with previous years' records. Pictures are sometimes used on areas which are never wholly covered with snow nor entirely bare, the percentage of area covered with snow being the basis of the stream runoff forecast.

E. L. Filby, Field Director, Committee on Water and Sewage Works Development, presented some interesting facts about the "Blueprint Now" program. He stated that making lists of work to be done was not suffi-

(*Continued on page 44*)

SHELDON

LABORATORY FURNITURE FOR CONTROL

Sheldon does more than manufacture a complete line of Laboratory Furniture. Experienced Sheldon Planning and Installation Engineers will help you plan efficient facilities for laboratory control. They also will assist you in selecting and installing furniture which will meet your needs efficiently and economically.

Write today for Catalog. Ask that our Engineers call

E. H. SHELDON & CO.

738 NIMS ST., MUSKEGON, MICHIGAN

MANUFACTURERS OF WOOD & METAL LABORATORY FURNITURE

(*Continued from page 43*)

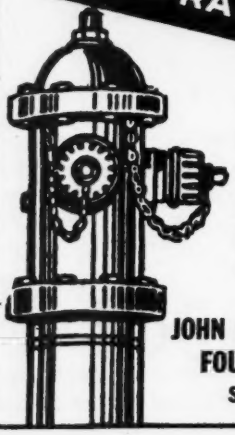
cient, but that the various worthwhile projects in each community must be carried forward to the point where contracts can be let in a very short time, so that when the war ends these projects may be used to keep men and women employed while industry is changing from war jobs to peacetime production. If your city does not have such a plan, get one going *now*. Be sure to provide a means for financing the work; if the necessary laws are not in effect, get them passed as soon as possible. Many millions of dollars worth of sound, necessary works have been planned and blueprinted but much more should be done *now*.

Maj. Lindon J. Murphy, OCD Reg. San. Engr., Omaha, Neb., talked on sabotage and related subjects. He said that newspaper reports tend to give us the impression that the end of the war is much nearer than it actually is and that we still have a long way to go. Sabotage is more likely than bombing in this area; however, it is not wise to disregard the possibility of bombing and some precautionary measures should be taken. He repeated that we have heard before about precautions to be taken, and that it is the duty of each water works to determine the nature and extent of its own protective measures.

(*Continued on page 46*)

IN CASE OF FIRE

KUPFERLE FIRE HYDRANTS



Complying with A.W.W.A. specifications and proven by more than a half century of service.

JOHN C. KUPFERLE FOUNDRY CO.
ST. LOUIS

NOW...*With Manpower Scarcer Than Ever*

YOU NEED A JOINTING COMPOUND THAT HELPS WITH THAT PROBLEM

Tegul-MINERALEAD, the quick-sealing compound for Bell & Spigot Water Main, requires no skilled labor or deep bell holes—works fast—is easy to handle, ship and store—can't change its correct composition—makes joints that stay tight for years, even under tough conditions.

REMEMBER—this is the compound that comes in the convenient 10 lb. ingot form, and is available quickly. Write

THE ATLAS MINERAL PRODUCTS COMPANY of PA.
Mertztown • Pennsylvania

The closest scrutiny—
the most exacting
tests—will always
prove the superi-
ority of Hersey
Water Meters.
HERSEY MANUFACTURING COMPANY
SOUTH BOSTON, MASS.
BRANCH OFFICES: NEW YORK PORTLAND, ORE. PHILADELPHIA
ATLANTA DALLAS CHICAGO SAN FRANCISCO LOS ANGELES

(*Continued from page 44*)

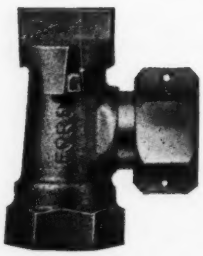
A motion picture entitled "Health and the Cycle of Water" followed Maj. Murphy's talk, and was presented through the courtesy of the Cast Iron Pipe Research Assn.

B. V. Howe, Colorado State San. Engr., started the Friday session with a paper on "Water Requirements of Cantonments." Tables and graphs contained in the paper showed that the demand for water in army camps varied from 30 to 187 per cent of the daily average, whereas the demand for municipalities varied from 66 to 135 per cent of the daily average. The design consumption of water for army camps is usually 50 gpd. per capita for field camps and up to 150 gpd. per capita for army posts; an additional 25 gpd. for each animal is also made.

Glen Saunders, Asst. City Attorney, Denver, gave a very interesting talk on "Legal Liabilities of Municipal Water Works." He cautioned that anyone dealing with a municipal water works must generally make sure that the water works has the power granted to it by the legislature for making the proposed contract. Home rule cities, such as Denver, are not controlled by State legislation, but a board or some other agency has the power to execute contracts. He also points out that it is better to deputize your guards for plant protection as they are less liable to have to prove

(*Continued on page 48*)

Ringstyle



The Ford RINGSTYLE Valve is an inverted key angle valve with meter coupling nut attached. For pit settings where meter is set on risers it makes a most convenient and satisfactory curb valve. Hundreds of thousands in service. Write for catalog and further information.

FORD METER BOX CO.
WABASH, IND.

SterilatorS by Wallace & Tiernan

Astonishingly Accurate in metering chlorine.

Astonishing Capacity range —ratios up to 1 to 110.

Astonishingly Easy to operate.

Safe Protected by automatic shut-off, vents and siphon breaks.

Write for Bulletin.

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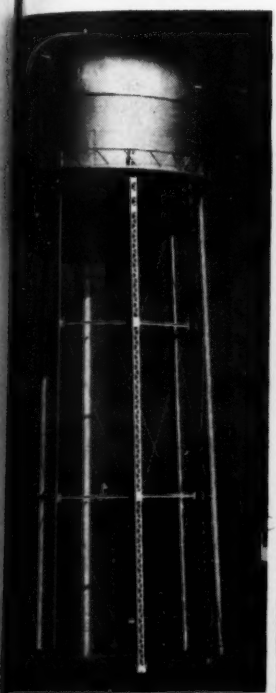
After the WAR..

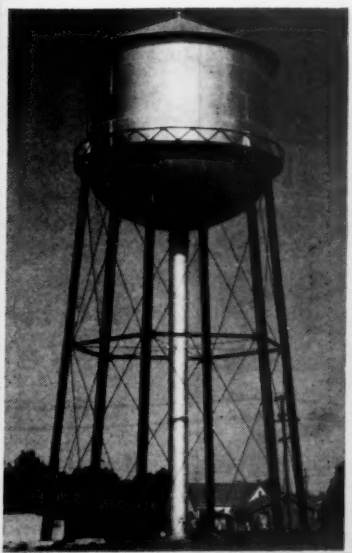
PITTSBURGH •DES MOINES *Elevated* STEEL TANKS...

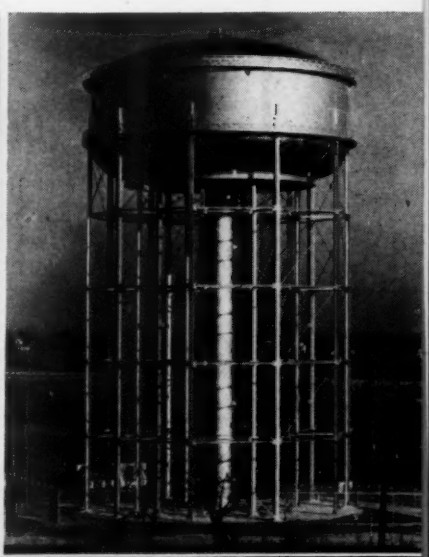
Will definitely help to raise the Living Standard of YOUR Community!

1893-1943
50 years
OF PROGRESS
IN STEEL DESIGN, FABRICATION and CONSTRUCTION

Making your town *a better place to live in* is a vital post-war objective, to be met by present planning. Better water service with Pittsburgh-Des Moines Elevated Tanks guards health, lowers operating costs, improves fire protection, and adds to the permanent assets of your municipality —facts which we will be glad to discuss with you at your convenience.







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NEW YORK, ROOM 921, 270 BROADWAY . . . CHICAGO, 1228 FIRST NATIONAL BANK BUILDING

DALLAS, 1229 PRAETORIAN BUILDING . . . SAN FRANCISCO, 631 RIALTO BUILDING

SEATTLE, 1133 EIGHTH AVENUE, SOUTH

(*Continued from page 46*)

the necessity of their acts than are plain citizens. Force, however, is permissible to evict trespassers in your property, but it is often difficult to prove that a reasonable effort was made to persuade the trespasser to leave without the use of force.

Ralph B. Mayo, of William Loach, Ralph B. Mayo and Co., Accountants, Denver, presented some interesting data relating to water works accounting, which he stated is more like business accounting than like governmental accounting and must be up to date in order to permit the water works to give reliable reports to the owners, creditors, managers and government agencies. Good accounting is also essential in making estimates for maintenance, operation and improvements. The accrual system, together with cost accounting, double entry and general ledger and budgets should be used.

Sixty-two attended the business luncheon which followed Mr. Mayo's talk.

A colored motion picture, "The Romance of Water," was shown by H. L. Potts, Water Rights Engr., Denver Board of Water Commissioners.

During the forepart of the afternoon a trip was made to the Moffat Filter Plant and the West Side Store Yards by a group of water works men.

(*Continued on page 59*)

"SCREW 'EM TOGETHER"

That's all you do to lay leakproof, 100-Year mains with

McWANE 2" CAST IRON PIPE

with THREADED *joints*

Any man can make this joint for all he does is screw 'em together. And how that cuts installation time—and costs. Immediate Shipments!

McWANE CAST IRON PIPE CO.
BIRMINGHAM 2, ALA.

M H

HIGH QUALITY VALVES HYDRANTS

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34. Address M & H Valve and Fittings Company, Anniston, Alabama.

The SIMPLEX SAND EXPANSION GAUGE

PUTS THESE WASH WATER FACTS *At Your Command!*

1. What wash water rate to use for maximum efficiency.
2. How long the proper wash period should be.
3. When optimum expansion has been reached.
4. What velocity and intensity of surface wash is needed.
5. What the optimum requirements of the wash period are.

Accuracy within 2% of actual sand expansion in all sizes and types of filter beds.

The Simplex Sand Expansion gauge gives accurate facts about your filter washes which make it possible to arrive at the perfect wash water cycle for any given plant — in any period of the year. The obvious savings in wash water, filter material, time, and labor, make this dependable unit a vital part of your filtration plant equipment. In conjunction with the Simplex Wash Water Controller, the Sand Expansion gauge may provide complete automatic control of the preferred wash cycle.

This instrument is as easily installed in plants now operating as in plants under construction. It responds within 2% of the actual sand expansion in all types and sizes of filter beds; gives trouble-free, dependable service, and is low in initial cost.

Write today for full details on the inherent value of the Simplex Sand Expansion Gauge.

SIMPLEX VALVE & METER COMPANY
6784 UPLAND STREET, PHILADELPHIA 42, PENNA.

(*Continued from page 48*)

An illustrated and demonstrated talk on "The Use of Calgon," by Mr. Gawan of the Denver Fire Clay Co., followed the picture shown by Mr. Potts. Mr. Gawan stated that relatively high dosages of "calgon" may be required for several weeks to control corrosion which has gotten a good start, but that in general 2 ppm. would be sufficient after the situation is under control. There is on the market a small unit which may be put in the hot water line in houses to prevent red water troubles.

H. Lloyd Nelson, Cons. Engr. of WPB's Office of War Utilities, gave us the following information on conservation. He stated that, due to the heavy demands for coal both at home and abroad and due to labor and transportation shortages, we are going to have to reduce voluntarily the use of coal or face coal rationing. Home owners can help by keeping houses at lower temperatures and by insulating their houses. Careful use in this one field might save as much as 18 to 20 millions tons of coal per year without causing hardship on the citizens. Water Departments and other utilities are also called on to help in the conservation program by preventing waste. This is to be accomplished by radio talks, news items, posters, slogans or any other means that may be developed. The A.W.W.A.

(*Continued on page 52*)

ANY OLD JOURNALS FOR SALE?

Do you have back issues of the JOURNAL which you will make available to the Association to help replenish its stock? Send a post card telling which you have of the numbers listed below and 50 cents will be paid for each copy obtained.

1920—January, March
1922—January, March, May, July
1924—January, March, May, July, September
1925—August
1926—January, February, March, April, May, June, July, August, September, October, November, December
1927—July
1928—January
1929—January, February, March, April, October
1930—January, February, April, May, November, December
1936—January, March, April
1937—January, March, July, October
1938—January
1939—January, March, October
1940—January
1941—July, September
1942—January

American Water Works Association
500 Fifth Avenue **New York 18, N. Y.**

IMPORTANT

Public Health must be maintained!

The necessity of maintaining public health in war time is self-evident. Municipal officers in charge of water purification and sewage disposal have a vital responsibility in guarding the nation's health, that should not be underestimated as a contributing factor to final victory.

However, the problems of maintaining public health are *becoming increasingly difficult in the face of material shortages and transportation handicaps.* In order to ease this situation in regard to *Aluminum Sulfate* as much as possible, won't you place your orders as far ahead as you can so that we may schedule our production on an efficient basis.

Why Most American Cities Prefer General Chemical Aluminum Sulfate

General Chemical Aluminum Sulfate is an especially developed "Alum." High quality and constant uniformity have given it *a time-tested* reputation among water works engineers and sewage plant operators.

★ FOR WATER WORKS

1. Makes water crystal clear.
2. Longer filter runs are obtainable.
3. Is economical, used properly will conserve chlorine supplies . . . because it does not require oxidation to make it effective.
4. Superior in tests against other coagulants.
5. High in quality, its constant uniformity can be counted upon.

★ FOR SEWAGE PLANTS

1. Clean, easy to handle and economical to use.
2. Simple application, requires only low cost feeding apparatus and minimum attention.
3. Clear, colorless effluents are possible.
4. Precipitated sludge digests readily.
5. Treated digested sludge dries quickly, without odor.

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Pacific Northwest Technical Service Offices: Wenatchee (Wash.) • Yakima (Wash.)

In Canada: The Nichols Chemical Co., Ltd. • Montreal • Toronto • Vancouver

(*Continued from page 50*)

in connection with several other organizations has a committee for this program and is preparing a booklet which describes a conservation publicity program, giving sample radio speeches, newspaper ads, posters, etc.

Arthur E. Gorman, Chief of the Water Section of WPB's Office of War Utilities, would like to have copies of any program you may develop as an individual company for his record. If you plan any improvements for 1944 which require strategic materials, and you feel that the work is justified during the war, please make application on Form 2774 to Mr. Gorman as soon as possible so that your requirements may be appraised and acted on.

Dana E. Kepner, San. Engr., Denver, presented some data showing relative costs for the zeolite and the lime-soda-ash methods for softening hard water. In general, the zeolite method is suitable for small installations and the lime-soda-ash method for larger plants, although some zeolite softeners have been used in larger plants where part of the supply is softened to zero hardness and then mixed with the unsoftened portion in such a ratio as to get the desired softening of the whole supply.

Mr. Kepner's talk closed the business session of the meeting which adjourned until 7:00 P.M., when 107 persons reassembled for the banquet during which Dwight D. Gross, Chief Engr., Denver Board of Water Commissioners was chosen for the Fuller Award; the report of the resolutions committee was read, the Chairman's pin was presented to Retiring Chairman H. G. Watson; and the new Chairman, George Turre, was inducted into office. We then had the pleasure of listening to a very interesting talk by Albert Evans, Asst. Director, China Relief Unit of the American Red Cross, who had a very vivid story to tell about his experiences in China and nearby countries.

This talk closed a very successful meeting of the Rocky Mountain Section of the A.W.W.A.

O. J. RIPPLE
Secretary-Treasurer

(*Continued on page 54*)

ZECO GREENSAND ZEOLITE

Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

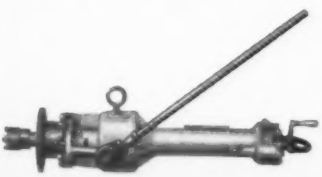
ZEOLITE CHEMICAL CO.
90 WEST STREET **NEW YORK, N. Y.**

Blueprint for Tomorrow

H-610 Sleeve
H-660 Valve

Everywhere alert officials are making post-war plans now. They are planning for many public improvements, airports, new homes,—expansion on all sides. All these call for water in increasing quantities and that means new mains and many branch connections.

The really satisfactory way to make these connections is to use MUELLER Tapping Sleeves and Valves. All work can be done under pressure at any point in the main without the annoyance of shutting off the water. Because of the unique gasket joints on the sleeves only the ends need be calked. Saves lead. Joint is permanent and water-tight. Actually strengthens the main. The tapping valves meet A. W. W. A. standards. All parts subject to wear are of bronze. The 4-point wedging mechanism assures tight closing without sprung discs or damaged seat rings. . . Invest in MUELLER Valves and Sleeves. In the tomorrow to come they will pay big dividends in long life, and freedom from repairs and costly upkeep expense.



For easy installation of branch lines nothing excels the "C-C" Drilling Machine. It makes cuts from 2" to 12" in any size main. Extra rugged and compact. Easily operated. Positive, automatic feed. Earns its cost over and over in time and expense saved.

MUELLER CO.

FOUNDED 1857

DECATUR, ILL.

(*Continued from page 52*)

REPORT OF NEW YORK SECTION MEETING

The keynote of the program was wartime activities as applied to water works throughout the country. The meeting was held at Binghamton, N.Y., September 30 and October 1. There was a total registration of 220: one of the largest registrations ever had at one of our three Sectional Meetings held each year.

The new Postwar Planning for Water Works was clearly outlined by E. L. Filby, Field Director, Committee on Water and Sewage Works Development. Mr. Filby requested that all of our Section Members co-operate in every possible way in getting plans started for postwar activities and construction. It is our understanding that this will be followed up by forms sent out to our various members. It was further understood that the full co-operation of the New York State Water Co-ordinator, Earl Devendorf, and his staff would be applied on this very important work.

On the matter of Conservation of Water Supplies, H. Lloyd Nelson, Cons. Engr., Water Division, WPB Office of War Utilities, outlined clearly the new brochure which has been prepared by the A.W.W.A. Committee, sponsored by the WPB in Washington. This conservation plan is now being actively followed out by all the utility fields, and it is to be hoped that our water utilities will prosecute the program vigorously.

Paul Valle, Administrator of Order U–1, of the WPB Office of War Utilities, Washington, D.C., presented in detail the "Maintenance and Repair of Water Utilities" and outlined the recent changes and proposed changes that all of the water utilities must follow. Further information will be found in the text of this JOURNAL.

The latest developments in the New York State Mutual Aid Program for Water Service were presented by Earl Devendorf, New York State Water Co-ordinator. Very favorable comments were made on the new and most complete publication prepared under the supervision and direc-

(*Continued on page 56*)

Edwin C. Hurd, Engr. and Architect, associated with his father's firm, Charles H. Hurd, Engineer, Ltd., in Indianapolis, was killed on October 3 while on a private flying mission when his plane fell into Saunders Lake near Camp Atterbury, Ind., a camp which his firm had designed. Born at Walcott, N.Y., he was a graduate of Cornell Univ. He had had a wide experience in sanitary engineering and designing in connection with his father's firm which designed the Indianapolis sanitation plant and at least some 50 others in the Middle West. He had been an Active Member of the A.W.W.A. since 1938.

SOLVING WATER PROBLEMS *—at the Pumping Station!*

WATER SUPERINTENDENT:

"What did we do about corrosion? We solved that problem with Calgon."

HERE'S what water superintendents in hundreds of American cities have done to solve the water problems of their various customers. Scale and corrosion troubles of big and little industrial plants, laundries, restaurants, hospitals and households are all being met by one proven method, the Calgon* treatment.

Calgon prolongs the life of iron and steel water pipe and water-using equipment for the entire community. Inexpensive, since only a few parts per million are needed, added at the pumping station by a simple feeding device, its benefits are felt throughout the system.

The four paragraphs on the right give an accurate resumé of Calgon's action in various phases of this preventive treatment. Read them carefully.

You can help to prevent shutdowns, to keep industrial and domestic water equipment operating at top efficiency. Get the whole story of Calgon's service. Write to us today for complete data relating to your water problems.

Calgon is the registered trade-mark of Calgon, Inc., for its glassy sodium phosphate products.

Calgon solves 4 water works problems

1. **Prevention of scale** from hard, high-bicarbonate waters. Calgon, added at the plant, prevents scale formation in mains, meters and hot-water heaters, throughout the system.

2. **Corrosion control**—Calgon forms a thin protective film on metals and metal oxides at pH values of 5.0 and higher. This reduces the attack of oxygen to such an extent that corrosion ceases to be a problem.

3. **Prevention of "red water"**—Calgon prevents the precipitation of dissolved iron. Thus "red water," either from iron initially present in well water, or from corrosion, can be eliminated.

4. **Stabilization of water** following lime or lime-soda softening. Calgon's ability to prevent precipitation of calcium carbonate stabilizes water to the ends of the system.

HAGAN HALL BUROMIN CALGON

calgon, inc.

A SUBSIDIARY OF HAGAN CORPORATION

HAGAN BUILDING PITTSBURGH PA.

(*Continued from page 54*)

tion of Mr. Devendorf and his associates—"Manual for the Emergency Sanitation and Water Auxiliary Training Program." This book will be a substantial contribution to the water works field not only during the war emergency but as a permanent manual on sanitation and water works maintenance programs. Every water works department should have one of these manuals.

"The Public Utility Goes to School" was ably presented by E. J. Rowe, Supt., Water and Light Dept., Wellsville, N.Y., and was discussed by Thomas A. Cole, Supt. of Filtration, Dept. of Water, Poughkeepsie, N.Y.

The new Ortho-tolidine-Arsinite Test for "Active" Chlorine, as developed by Francis J. Hallinan of the Div. of Labs. and Research of the New York State Dept. of Health, was presented.

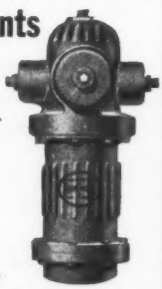
A Round Table Discussion, led by Hugh Dewey, Vice-Pres., Western New York Water Co., Buffalo, closed the sessions.

R. K. BLANCHARD,
Secretary-Treasurer

(*Continued on page 58*)

Vogt Fire Hydrants

Standard—
"Traffic Model"—
Flush Type—
Water Crane—
Type



Vogt Gate Valves

Non-Rising Stem—Outside Screw and Yoke—Hub End—Flanged End—Ends to Fit any Type Pipe.

Also—Floor Stands, Shear Gates—Tapping Sleeves and Valves, Flap Valves and Mud Valves.

Vogt Brothers Mfg. Co.
INCORPORATED
MAIN AT 14th ST.
LOUISVILLE KENTUCKY

NO MORE RUST

Will Form Inside Your Steel Tanks If You Use

"RUSTOP"

STOPS CORROSION—Immediately, Permanently, and **ECONOMICALLY.** No Sandblasting, Scraping or Painting. Many Types of Special Applications.

Write immediately for complete data and quotations—No obligation.

THE APPROVED METHOD

RUSTOP
THE CATHODIC SYSTEM
OF
CORROSION PREVENTION

ELECTRO RUST-PROOFING CORP.
DAYTON • OHIO

Augustus Hall couldn't have a better reason for going

"All out for Victory"

Staff Sergeant Arthur Hall, U. S. Army Air Corps, formerly in Aircraft Parts Assembly Dept., The American Metal Hose Branch of The American Brass Company, and his Dad, Augustus Hall, accountant in the Timekeeper's Office, see eye to eye on doing the best possible job today so that victory will be that much closer tomorrow.

It would be difficult to find a man who realizes—better than Augustus Hall does—the importance of all-out war production.

Himself a veteran of the first World War, "Gus" has only to think of his son, Arthur, U. S. Army Air Corps . . .

This Hall father-son "incentive" isn't at all unique at American Brass. For thousands of other workers here have a similar *added stimulus* to produce, quickly, the finest possible copper and brass war material for their sons, brothers, relatives and fellow workers . . . to help *them* win their battles . . . so *they* can come home sooner. That's the motivating spirit in every plant operated by The American Brass Company—all U.S. plants fly the Army-Navy "E".

Everdur Metal in War and Peace

And we can all have the satisfaction of knowing that the restrictions and sacrifices of today help make possible tomorrow's victory. For example, Everdur* Metal, Anaconda's strong, corrosion-resistant copper-silicon alloy, is being produced in large quantities—not for water works or sewerage treatment construction—but for tough war jobs like screw fastenings in PT boats and hydraulic lines in airplanes. 4343S

*Reg. U. S. Pat. Off.

THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Conn.

Subsidiary of Anaconda Copper Mining Company . . . In Canada: Anaconda American Brass Ltd., *New Toronto, Ont.*

ANACONDA

Anaconda Copper & Brass

COOK Well Strainers

A reciprocal relation, the life and functioning of the one depending much on the other.

A. D. COOK, INC.

Lawrenceburg - Indiana

COOK Deep-Well Turbine Pumps

(*Continued from page 56*)

SOUTH DAKOTA WATER AND SEWAGE WORKS CONFERENCE

The advisability of developing plans and specifications and arranging for financing of contemplated postwar improvements was emphasized at the Ninth Annual Meeting of the South Dakota Water and Sewage Works Conference held simultaneously with the League of South Dakota Municipalities and the South Dakota Secretaries Assn. The meeting was held at Mitchell, September 15–16. Seventy-six persons were in attendance, all of whom are either actively engaged or directly connected with the water and sewage works facilities.

Through the courtesy of the American Plumbers Assn., the film of the "Ominous Arms Case" was shown and created quite an interest among the group. The Layne-Western Company of Minneapolis showed their film, "The Test of Time." The showing of the film "Oil for War" was made possible through the Barrett Division.

Gunder Nelson of Pierre presented a very interesting paper on the Gas Wells of Pierre, bringing out the fact that the gas is never found dry but is always accompanied by a large flow of water, therefore, they have to erect large separation tanks in which there is an arrangement of baffles to separate the gas from the water. He also stated that the gas and water were very corrosive to the pipe; therefore, there was a constant cost for maintenance making it a losing financial undertaking for the City.

G. S. Schroepfer, Pres., Fed. Sew. Works Assn., discussed the advantages of being a member of the Federation, bringing out that it was not only national but international in scope; that through the Journal members receive the benefit of the experience of operators throughout the world and all of the latest news from the research laboratories. He also impressed upon those present that now was the time to plan for postwar work, stating that engineers are now available and could give more time to planning, that the chances were it would be more economical in that the

(*Continued on page 60*)

PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

Trade Mark MABBS Reg. U. S. Pat. Off.

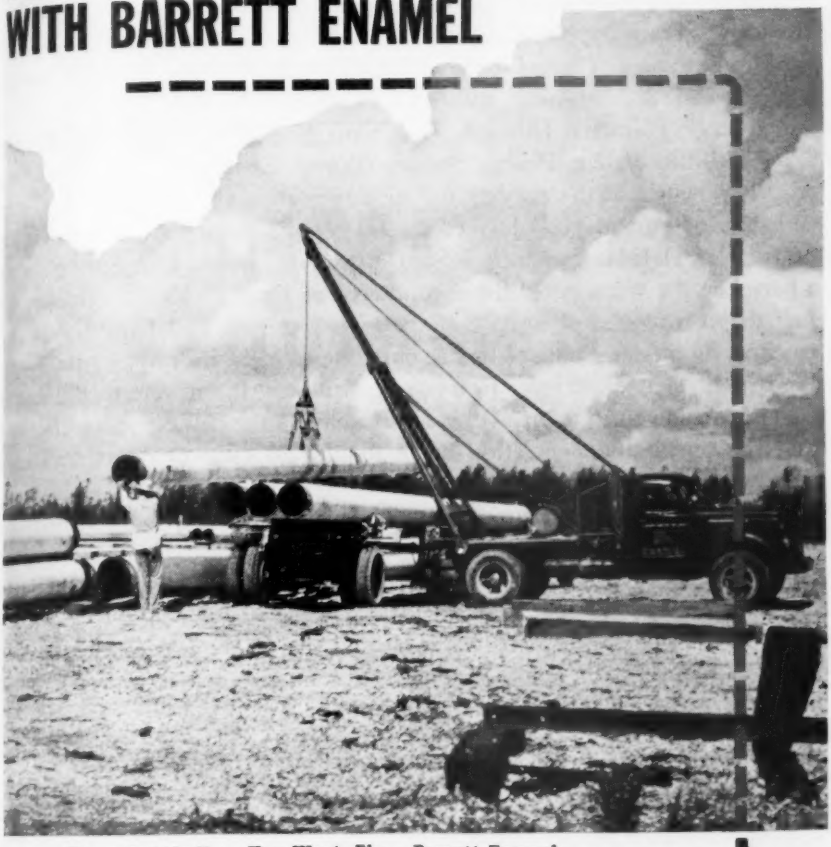
MABBS RAWHIDE PACKING

An Ideal Packing for Water Works and Sewage Pumps and Valves

MABBS HYDRAULIC PACKING COMPANY, *Inc. 1892*

431 S. Dearborn St., Chicago, Ill.

SUPERIOR PROTECTION AT LOW COST WITH BARRETT ENAMEL



Water Supply line, Key West, Fla. Barrett Enamel

WATERWORKS engineers everywhere know from experience that Barrett protection pays. Low in initial cost, Barrett Waterworks Enamel decreases future repair and replacement requirements. Its hard, mirror-like finish provides a high coefficient of flow, and helps to maintain capacity at top level.

Barrett Enamel is dielectric, water-tight and resistant to corrosion and to mechanical distortion. It is made from coal-tar pitch—the most stable material known for underground pipe protection. Barrett Waterworks Enamel meets the standard specifications of the American Water Works Association, 7A.5 and 7A.6.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK

FIELD SERVICE—The Barrett Waterworks Service Department and staff of Field Service men stand ready to provide a broad measure of cooperation. These services include consultation on technical details, training of crew, and job inspection.

Barrett WATERWORKS ENAMEL

(*Continued from page 58*)

municipalities would get better planning. They could have an estimated cost on the improvements, thereby being able to work out their financing. He advised the group that the Federal Government in all probability would expect the cities to pay for the improvements and that it could not be planned as a WPA project such as before Pearl Harbor.

Glen J. Hopkins, Director, Div. San. Eng., State Board of Health, explained the Public Health Service Water Standards, including their recent revision and the reasons for such revision.

The afternoon was devoted to papers on activities throughout the State. Ira DeHaai, Sanitarian, State Board of Health, Hot Springs, gave a paper on the water problems encountered at Provo. He brought out the fact that Provo had no supply of its own, how they had hauled water by truck, and how the Railroad had at one time brought in water by tank cars. He told of their experience in trying to drill a well, but due to the cost it was impossible for a town of this size to handle the project. He also said that the fluctuating population made it hard to estimate just how much of a supply was needed.

Eddie Frazier, Mobridge, presented a paper on the improvements to the Mobridge water treatment plant in which he told of the difficulty he had had in previous years with the water freezing in the clarifier. He was in hopes of overcoming it by insulating the sidewalls and roof of the clarifier house. He also told how he had the joints welded on the pipe guard rail around the clarifier and then connected same with the steam boiler to give heat inside the clarifier house.

H. Lloyd Nelson of the WPB Water Div., Washington, D.C., discussed the need for conservation of fuel, water, electricity and other utilities to keep them functioning. He said that all utilities would be asked to make up their needs a year in advance. He informed the group that the forms, if not already in their hands, would soon be, and urged that these forms be made out and returned as soon as possible.

New Officers for the ensuing year are: Pres., C. A. Polley, Lead; Vice-Pres., M. J. Hoy, Watertown; and Secy.-Treas., Glen J. Hopkins, Pierre.

The Directors are: Harry Steckler, Yankton; Henry Pierce, Huron; George Barnes, DeSmet; C. R. Stout, Bryant; Chas. Price, Rapid City; Joe Stromme, Madison; and Rhea Rees, Sioux Falls.

[*Extracts from a report by Glen J. Hopkins, Director, S. D. State Board of Health Div. San. Eng., and Secy.-Treas. of the S. D. Water and Sewage Works Conference.*]

A new bulletin, No. 1088, has been issued by Everson Mfg. Co., describing the designing of Everson SterElatorS so that the basic unit remains unchanged but by adding various controls can be converted to perform its functions in various manners.

(*Continued on page 62*)

SMITH

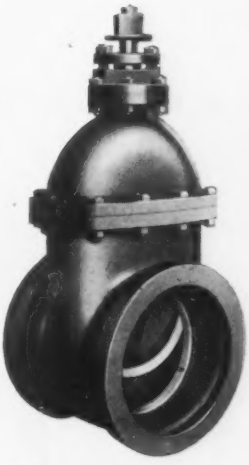
WATER WORKS
SPECIALTIES & SUPPLIES

THE A.P. SMITH MFG. CO. EAST ORANGE, N.J.

SMITH
EQUIPMENT

FOR THE WATER WORKS FIELD

SOME OF OUR OUTSTANDING EQUIPMENT—



Tapping Machines

Tapping Valves

Tapping Sleeves

Pipe Cutting Machines

Indicator Posts & Specialties

Valves & Hydrants

Water Meters

Brass Goods

Branches

7 So. Dearborn St., Chicago, Ill.
409 Texas St., El Paso, Texas
315 N. Crescent St., Flandreau, S. D.
901 Wm. Oliver Bldg., Atlanta, Ga.
428-13th Street, Oakland, 12, Calif.
524½ First Ave., S., Seattle, Wash.
1317 Oakley St., Orlando, Fla.

THE A. P. SMITH MFG. CO.
EAST ORANGE, N. J.

(*Continued from page 60*)

The manually controlled, solution feed, vacuum type SterElator is the basic unit and is used where constant feed at a fixed rate is satisfactory. The rate of feed can be changed manually within a ratio of 10 to 1 by using the chlorine control valve.

By the addition of a solenoid valve this basic unit becomes semi-automatic in its function, starting and stopping with the plant pumps, but it still feeds chlorine gas at a fixed rate while operating.

By adding a flow operated device which converts the rate of flow into differential pressure, the basic unit becomes a Hydro-Matic proportioning unit which automatically proportions the flow of gas to the flow of liquid being treated within a ratio of 5 to 1.

By adding a flow operated device, an electric "Robot" and an automatic gas throttling valve, the basic unit becomes an Electrono-Matic proportioning unit with a ratio of 10 to 1. The Electrono-Matic SterElator also visibly indicates the flow of liquid being treated.

Meters are available which when added to the Electrono-Matic SterElator will totalize and record the flow of liquid being treated. By using electronic timing devices the basic unit is converted to intermittent operation with definite but adjustable cycles on and off.

A new pocket size "Three-Point Pipe Gage" for instantaneous measurement of all sizes of pipe from $\frac{1}{8}$ to 12 in., has been placed on the market by the Three-Point Gage Co., 3821 Broadway, Chicago.

This gage, which is patented in Canada and for which patents are pending in the U.S., consists of two pivoted steel plates with edges curved at three points for contact with the pipe to be measured, together with scale which automatically registers not only the pipe size in terms of inside diameter but the drill size for tapping.

It is claimed by the manufacturer that the gage measures by the simple, practical method of determining the outside arc of the pipe at three points

(*Continued on page 64*)

AMERICA'S MOST AMAZING PUMP
PEERLESS
HI-LIFT PUMP
Manufactured under R. Maineau's Patents, U. S. 1892217 and 3028407. Canadian Patents 352574. By exclusive license to Robbins & Myers, Inc.

...Unique chrome rotor literally squeezes water uphill.
FOR DEEP WELLS 4" OR LARGER
500 TO 3500 GALLONS PER HOUR
ASK FOR LITERATURE
Also available: turbine and propeller types; capacities up to 100,000 g.p.m.
PEERLESS PUMP DIV. • Food Machinery Corporation
Factories: Los Angeles, San Jose, Fresno, Calif. and Canton, Ohio

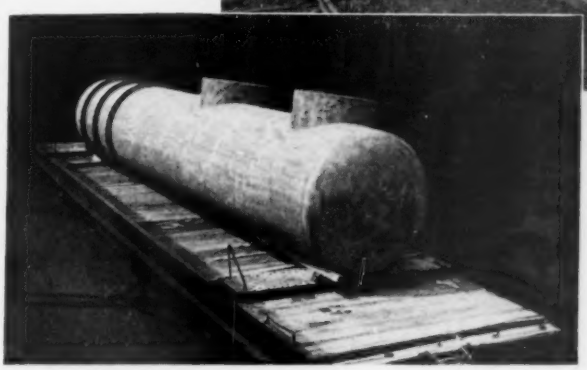
Filter Plant Equipment
COMPLETE LINE
Specializing in
Duplex Filter Bottoms
Write for Bulletin GFC-100
F. B. LEOPOLD CO., INC.
422 1st Ave. Pittsburgh, Pa.

ALCO

ELECTRIC WELDED STEEL PIPE

PLAIN LENGTHS OR SPECIALS

36" O. D. Piping Ready for Loading.



Special 60" O. D. Header.

Alco Electric Welded Steel Pipe Insures Against Leakage and Breakage

AMERICAN LOCOMOTIVE COMPANY

ALCO PRODUCTS DIVISION

30 CHURCH ST., NEW YORK, N. Y. DUNKIRK, N. Y.

Wm. A. Hansell Asst. Chief of Construction of the City of Atlanta, died on September 9 at the age of 70.

He was a graduate of Georgia Tech. and had been associated with the engineering and construction field most of his life in Atlanta. He was a leader in developing Atlanta's metropolitan sewerage system. He had been a member of the A.W.W.A. since 1933 and was also a member of A.S.C.E. and Am. Public Works Assn.

(*Continued from page 62*)

of contact, and that, by placing the two fixed contact points of one plate against the outer contour of the pipe and sliding the second or moveable plate until it makes the third contact, the marker on face of the gage will show accurately the size of the pipe and also the correct drill size for tapping.

An additional advantage claimed for this new gage is that it is necessary to contact only a small section of the pipe contour and that it will measure pipe in any position, even against the wall or in a corner, and will measure a covered pipe if there is a small opening near a union or other fitting where the gage may be slipped in. It is also maintained that the gage can be applied in dark places and taken to the light for reading. The gage is constructed of steel with deep etched numerals, and the size when closed is only $2\frac{1}{2} \times 4\frac{1}{4}$ in.

"Water Supply—Omaha's Most Essential Service" is a fine 28-page brochure, with a foreword and twelve chapters presenting extensively in pictures and words the story of Omaha's municipal water system. The use of many fine illustrations and a second color, blue, makes this a very attractive brochure which should be most effective in Omaha's public relations. The chapters are: (1) Why and How the System was Built, (2) Water a "Manufactured" Product, (3) Water Plant Production System, (4) Fire Protection, (5) Safe Water for Your Home, (6) Mains and Distribution System, (7) Quality and Hardness of Water, (8) Organization and Management, (9) Financial and Service Policies, (10) Plans for the Future, (11) Water Service in Wartime, and (12) The People Behind Your Water Supply.

Ralph W. Lawton, retired engineer and Vice-Pres. of the Los Angeles City Health Com., died August 20 at the age of 74. He had supervised the construction of all parts of water systems and had spent 30 years in India, working for the British Government as engineer on civil, hydraulic, water works and sanitary assignments. He had been an Active Member of the A.W.W.A. since 1906 and was made an Honorary Member in 1938.

NEWS OF THE FIELD

Water Departments that find themselves unable to carry on their essential activities should obtain "Certificates of War Necessity" from the district managers of the O.D.T. Division of Motor Transport.

Some local rationing boards have cut the gasoline allotment to water works plants without giving adequate consideration to the *essential* nature of public water supply operations and failing to recognize the danger to health and property that would result if a city's water supply was not adequately revised.

The situation was properly presented to the Regional Director of the O.D.T. in the area affected and a memorandum was promptly sent to all District Managers in the area instructing them to avoid creating any undue hardship or unexpected breakdown in public water supply systems.

The situation is one which cannot be made the subject of a formal or general order. Inquiries addressed to the A.W.W.A. office will bring instructions concerning procedure.

The Petroleum Administration for War announced on September 23 the suspension for the time being of its program for the conversion of industrial and commercial oil-burning equipment to the use of coal.

In making the announcement, Petroleum Administrator Ickes said:

"We are suspending the program in view of the uncertainties in the coal situation, including the shortage of delivery equipment and manpower for retail coal delivery.

"No one should construe this suspension of the industrial and commercial conversion program as meaning that we are 'over the hump' as far as oil supplies are concerned. War developments might well make it necessary at some future time to resume the program, especially in view of the fact that we are still faced with an over-all shortage of oil in the United States."

The PAW announcement emphasized that the suspension of conversion activity does not apply to conversions now in process, inasmuch as the supply program for the coming winter has been based upon the assumption that requirements will be reduced by the amount now used in these facilities.

Reviewing the conversion campaign to date, Deputy Administrator Ralph K. Davies pointed out that industrial conversions to date have resulted in savings equivalent to 176,500 bbl. of fuel oil per day.

(*Continued on page 2*)

(*Continued from page 1*)

Gasoline available to civilians is running some 500,000 bbl. short of the daily pre-war supply as military needs take ever-increasing amounts and production is urgently pressed, according to a recent release by the Office of War Information.

Not only will there probably be less automobile gasoline but its quality will undoubtedly become progressively poorer as greater amounts of the limited supply of tetraethyl lead are absorbed for aviation gasoline and 80-octane all-purpose gasoline. Daily production of all types of gasoline, both for civilian and military use, is about 1,800,000 bbl. (42 gal. per bbl.). Of this amount, the armed forces and Lend-Lease take about 600,000 bbl. daily, leaving for civilian use about 1,200,000 bbl. a day. In 1941, civilians —including farmers and industrial users—consumed about 1,700,000 bbl. a day, according to state gasoline tax figures.

The present civilian total allows about 550,000 bbl. a day for passenger automobiles, 450,000 bbl. for trucks, buses and cabs, and 200,000 bbl. daily for off-highway industrial and farm use. The report assures that enough gasoline will be available for the nation's farmers, war workers, necessary community activities and essential commercial transportation.

The report goes on: "In January 1942, the capacity for moving petroleum and its products over-land from the Southwest to the East Coast was slightly more than 200,000 bbl. daily. Nearly a million and a half—or seven times as much—can be moved daily now. It is estimated that by March 1944, we will be able to transport between 1,600,000 and 1,700,000 bbl. of petroleum products a day, providing supplies are available. Of the latter amount, 535,000 bbl. a day will be provided by the 24-in. Big Inch pipeline and the 20-in. line, when both are operating at capacity. An ultimate capacity of 735,000 bbl. a day of petroleum is foreseen by the Petroleum Administration for War when all its pipeline projects are completed."

Capt. L. V. Z. Brown, for 14 years Dist. Mgr. and Div. Mgr. for Wallace & Tiernan in the Southwest, is now in an overseas service unit. He has served and received instruction at Carlisle Barracks, Edgewood Arsenal and the Sanitation Branch at Fort Bragg. He came to the water works field after being graduated from Texas A. & M. in 1929 with a B.S. in Civ. Eng.

Maj. H. H. Gerstein, in service with the Sanitary Corps, was promoted to the rank of Major in August. He is now stationed at Truax Field, Madison, Wis., where he is San. Engr. He was formerly San. Engr. in Chicago's Div. of Water Purification.

(*Continued on page 4*)

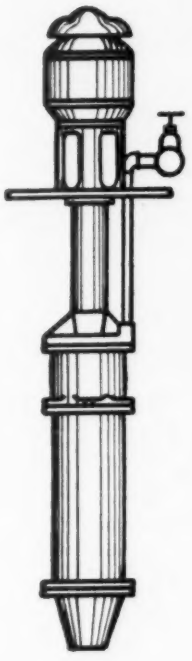
AMERICAN MIXING EQUIPMENT

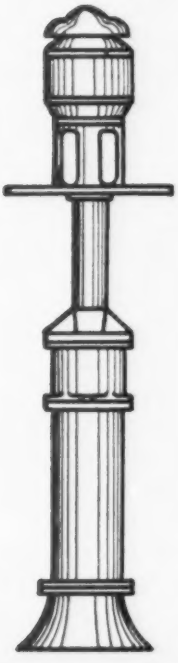
Rapid Mix

Flocculation

Recarbonation

Aeration





For best results and economy in initial and operating costs choose American Mixing Equipment. All units individually designed to meet varying field conditions.

Send for Bulletin No. 255

Buy American

THE AMERICAN WELL WORKS

AURORA ILLINOIS

MANUFACTURERS OF

Pumping,—Sewage Treatment,—and Water Purification Equipment

(*Continued from page 2*)

H. A. Van Norman, Gen. Mgr. of Los Angeles' recently reorganized Dept. of Water and Power, has appointed W. W. Hurlbut and R. R. Robertson as Deputy Gen. Mgrs. Hurlbut will also have the title of Chief Engr. of Water Works and Robertson the title of Chief Electrical Engr. H. C. Gardett, retiring Chief Electrical Engr., will be retained for a time as a consultant. These changes were made after the action of the Los Angeles Water and Power Com. on October 19, consolidating the Bureau of Water Works and Supply and the Bureau of Power and Light under Van Norman's management.

Laurance E. Goit is Hurlbut's principal assistant with the rank of Water Distrib. Engr., and Charles P. Garman, Engr. of Station Design for the electric system, is Robertson's chief assistant. Hurlbut is a veteran of 36 years' service with the department and has been Asst. Gen. Mgr. to Van Norman since 1939.

William L. Lamar, Associate Chemist for the U.S. Geological Survey, is now at Raleigh, N.C., where he is supervising and conducting laboratory and field work for the Quality of Water Laboratory which the Geological Survey has just established at the N.C. State College of Agric. and Eng. The laboratory is being operated in co-operation with the N.C. Dept. of Conservation and Development, and studies are being conducted on the quality of water supplies for industries, municipal use, and war activities. Lamar has been connected with the Geological Survey for 14 years, conducting studies of water chemistry. Since 1937 he has been engaged in the development of information on the quality of surface and ground waters in Georgia, in co-operation with the Ga. Div. of Mines, Mining and Geology. Some of this information has been made available to JOURNAL readers in a paper by Lamar in the April 1942 JOURNAL.

Mary Dowling is a new applicant on the distaff side for A.W.W.A. membership. She is Sales Repr. for the Vinson Specialty Paint Co., with the headquarters address of P.O. Box 1116, Little River Station, Miami 38, Fla. The Vinson company has a line of paints, enamels and protective coatings for outside and inside of tanks, pipes, concrete basins, etc.

Capt. Everett C. Handorf, who for the past year has been serving in the post of Instructor in the Dept. of Sanitation at the Officers Candidate School at Camp Barkeley, Texas, is now assigned for a course of study at the Civil Affairs Training School at Yale Univ. Before his initial Army service in Camp Sanitation and Mosquito Control at Camp Livingston, La., he was San. Engr. at Memphis, Tenn. He received his training at the State Univ. of Iowa Engineering College.

(*Continued on page 6*)

An Oasis in the Desert

To many U. S. Army flyers this tank would be a more thrilling sight than an oasis on the desert. And in a way it is like an oasis for it supplies water under gravity pressure at a large flying field in the Southwest. It has a capacity of 500,000 gallons and is 85½ feet to bottom.

CHICAGO BRIDGE & IRON COMPANY

BIRMINGHAM
PHILADELPHIA
SAN FRANCISCO
CHICAGO
NEW YORK
HOUSTON
WASHINGTON
TULSA
CLEVELAND

(*Continued from page 4*)

From Maj. Edward W. Moore (somewhere in England) comes a letter of thanks for current JOURNAL files and certain war-related material:

"I have had occasion to refer several times already to the material sent by you. . . . As you probably know, I am directing the division of the laboratory which does all the water and sewage bacteriology and chemistry. Practically all such work in this theatre is done here, and there is plenty to keep us busy. In addition, we get all sorts of miscellaneous things, from insecticides to lithographing solutions. There is some field work in a consulting capacity and this has proved particularly interesting.

"One of our greatest deficiencies so far is the lack of recent literature, at least in a readily accessible place. There are libraries in London, of course, but travel is neither easy nor comfortable enough to encourage frequent trips. . . ."

Changes in the JOURNAL staff: First, Eric F. Johnson, Assoc. Ed., entered the Marine Corps on November 4. Second, Victor H. Allen, Mng. Ed., has been scheduled for Army service beginning November 23. Consequently, production of the JOURNAL and other Association work have been reorganized and the absent men's wives, Theoda S. Johnson and Jennie H. Allen, have come to work for the Association. Not only their training but also their familiarity with Association work have left the Association in a good position for these times as far as manpower or womanpower goes.

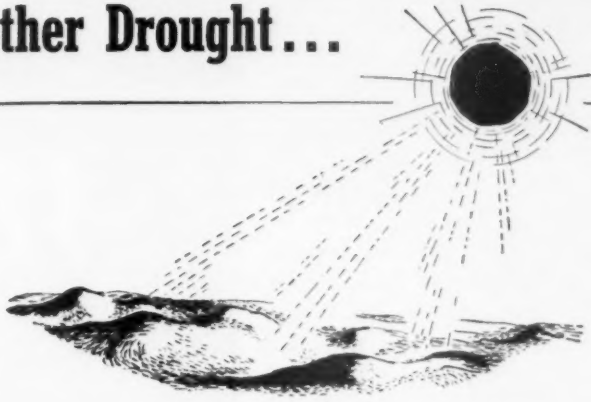
A recent addition to the staff is Mrs. Edna Deu Pree Nelson, Assoc. Ed., who, before coming to the Association three months ago, worked with Boyd A. Bennett, Pres. of Northeastern Water & Elec. Service Corp. She brings to the JOURNAL an impressive experience in advertising, publicity, editing and free lance writing. Many members are now well acquainted with the "Water Conservation" program and book which Mrs. Nelson compiled in parts, wrote in parts, art directed and shepherded through difficult printing production.

Frank O. Lee has resigned from the position of Director of Public Works for the City of St. Petersburg, Fla., to enter into partnership with Paul J. Jorgensen, formerly Asst. City Engr. for St. Petersburg, in the organization of a consulting engineering firm, with headquarters at St. Petersburg. The new firm will serve in sewerage, water supply, marine structures, municipal and structural engineering, and valuations and reports.

Edward A. Bell, formerly Borough Engr. at Essex Fells, N.J., is now serving in the Naval Reserve as Lt. (j.g.) and is stationed at the U.S. Naval Construction Training Center, Camp Peary, Va.

(*Continued on page 8*)

Plain Facts Regarding the Possibility of Another Drought...



A CAREFUL study of the precipitation cycle for the United States east of the Rockies shows that 7.4 years is the average period from maximum rainfall to drought. We are at present on the decline toward exceedingly dry weather.

What will this mean to your water supply and sanitation problems? Have you the facilities to handle conditions of decreased water with possible increases in population and industrial demands? Do you have an accurate indication of your present water treatment capacity?

Before water is scarce we would like to see hundreds of municipal engineers inaugurate accurate water surveys — to find where leaks are if any; to check pumps, meters, and trunk main lines so that every community will be assured of an adequate continuous supply of water.

Simplex Valve & Meter Company draws this basic and vital information to your attention, not alone because we manufacture pitot equipment for making accurate water surveys, but because it is our firm belief that every possible effort should be made now, to avert a disaster such as the dust bowl which we remember all too vividly in the recent past. . . . Simplex Valve & Meter Company will be glad to discuss this matter in further detail with you.

SIMPLEX VALVE & METER COMPANY
6784 UPLAND STREET, PHILADELPHIA 42, PA.

(*Continued from page 6*)

Harry C. Heermans

At the Sixth Annual Meeting of the A.W.W.A., held in Denver, Col., June, 1886, there was elected to Active Membership in the Association, among others, Harry C. Heermans, then Supt. of the water company at Corning, N.Y.

On September 13, 1943, Mr. Heermans died in Seattle, Washington at the age of 91.

His 57 years of continuous membership in the A.W.W.A. is clearly a record. He had been a resident of the State of Washington since 1889 and active in real estate promotion and water works management until his retirement in 1927. When he sold the Hoquiam Water Co. to the Oregon-Washington Water Service Co., he transferred as a *valuable asset* of the property, a complete file of the bound PROCEEDINGS and JOURNAL of the A.W.W.A.

He was loyal to the manufacturers of equipment who had served his properties. He would buy only one make of valve, of hydrants, of meters —except when overmastering reasons indicated the wisdom of deviation.

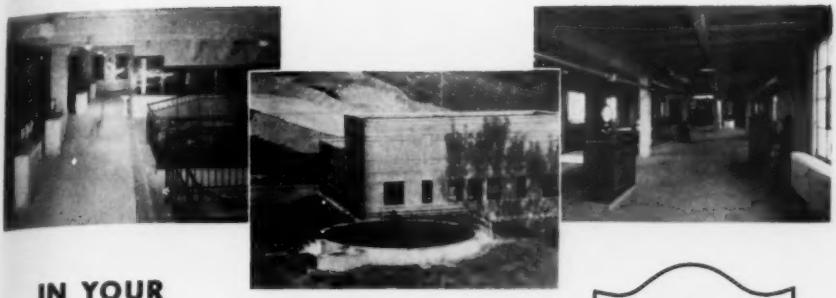
He remained loyal to the Association and interested in water works until his death.

In point of years' membership in the A.W.W.A., the record now is held jointly by two men who joined the A.W.W.A. in September 1893. One is Emil A. Croll of Orlando, Fla., and the other is William F. Wilcox of Atlanta, Ga. Mr. Croll has retired from business but Mr. Wilcox remains actively engaged in the sale of water works equipment in the Southeastern territory.

Lt. Richard Hazen, CEC.–USNR, is now attached to the Office of Superintending Civil Engr., Area III, Bureau of Yards and Docks, Norfolk, Va. He has been on a leave-of-absence from the firm of Malcolm Pirnie, Civil Engr., New York, since August 1942.

Charles F. Holdrege is now serving at Lt. (j.g.) USNR and currently in training at the General Ordnance School at Washington, D.C. He has been with the Metropolitan Utilities Dist. of Omaha for the past 10 years, most recently as Design Engr.

(*Continued on page 10*)



IN YOUR POST WAR PLANNING

Remember—

The INFILCO Equipped Water Purification Plant

CENTRALIZES EQUIPMENT RESPONSIBILITY AND ASSURES COORDINATED RESULTS

You are invited to make use of the experience gained by Infilco during the 40-odd years of designing and manufacturing every type and size of water purification equipment.

In furnishing everything required for water conditioning—from Accelators to Zeolites—Infilco offers you the important advantage of undivided responsibility for successful equipment operation.

And—your plant will be in step with modern developments, because Infilco has always been the first to introduce and adopt worthwhile improvements, as well as first to discard anything proving to be a hindrance to progress.

The services of its staff of experienced engineers and laboratory facilities are at your disposal for the asking.

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PRODUCTS

Accelators
Aerators
Automatic Controls
Chemical Feeders
Clarifiers
Coagulators
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Dosing Siphons
Filter Equipment
Flow Controllers
Flow Gauges
Fluorex Purifiers
Gravity Filters
Hydraulic Controls
Hydraulic Switches
Hydrodarco Purifiers
Level Controls
Lime Slakers
Loss of Head Gauges
Mixing Equipment
Pressure Filters
Proportioners
Recarbonators
Rotary Distributors
Samplers
Settlers
Sewage Activators
Sewage Equipment
Sewage Griductors
Venturi Tubes
Wagner Underdrains
Water Filters
Water Softeners
Zeolites

(*Continued from page 8*)

Bayard F. Snow is now Regional Engr. for Region 1 covering New England and New York for the Water Div. of WPB's Office of War Utilities. For more than a year past he was Head San. Engr. with the Institute of Inter-American Affairs at Belem, Para, Brazil. Previous to that he served the Navy Dept. for more than a year in the British West Indies and Porto Rico, having previously conducted a consulting engineering practice with headquarters at Boston.

Allen O. Hopper, formerly Dist. Mgr. for the Turbine Equipment Co. at Rochester, N.Y., has been transferred to the Company's New York office at 75 West St., New York.

Gilbert R. Frith, formerly Asst. Engr., Georgia State Board of Health, Div. of San. Eng., is now serving as a Major in the Sanitary Corps and is stationed at Camp Barkeley, Texas.

Emmons W. De Berard, formerly with Greeley & Hansen, Cons. Engrs. of Chicago, has been commissioned as Lt. (j.g.) USNR. He was recently Resident Project Engr. for Greeley & Hansen on the development of a new source of supply for Centralia, Ill.

Ralph G. Berk is now employed as Hydraulic Engr. by the U.S. Engineer Office and is stationed at Camp Roosevelt, Ocala, Fla. He was formerly Mech. Designing Engr., Dept. of Public Works, Chicago.

Capt. W. W. Watkins, formerly Supt. of the Water Dept. at Oneonta, N.Y., and serving in the Sanitary Corps for some time, is now stationed at La Garde General Hospital, New Orleans.

Capt. I. W. Mendelsohn, C.E., has been transferred by the War Dept. after a month's training at Fort Custer, Mich., to the Univ. of Wisconsin for an additional two months' training, preparatory to transfer abroad for service in Allied Military Government. He previously served as Post Engr., Q.M. Depot, and Asst. Post Engr., Camp Hood.

Gerard C. Eck has left the position of Asst. Chief Chemist at the Shelton Div. of Rayonier Inc. where, due to a shortage of logs the Shelton pulp mill has been closed. He has accepted a position in the Central Technical Laboratory of the Crown-Zellerbach Corp. at Camas, Wash.

(*Continued on page 12*)

STEEL PIPE...WEAPON OF WAR

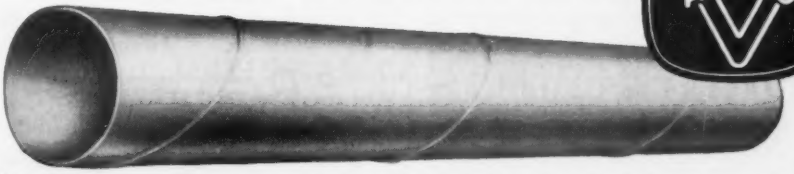
Production generals find ARMCO Spiral Welded Pipe an effective weapon against waste and inefficiency on vital war projects. The same steel pipe that served so ably in peacetime water supply and force mains now conserves time, labor and metal for the war effort.

ARMCO Pipe is easy to install without the use of skilled labor. Fifty-foot lengths mean fewer joints, less assembly work. A spun-enamel lining assures high flow capacity, prevents tuberculation and recurrent cleaning troubles. Shattering or sudden breaks are no worry, because "Spiral Welded" has an ultimate strength of 50,000 to 60,000 pounds per square inch. Sizes range from 6 to 36 inches, with wall thicknesses in any diameter to meet the needs of specific jobs.

Even though you cannot get ARMCO Spiral Welded Pipe for other than the most important war projects, be sure to include it in your plans for the future. When Victory comes it will again be ready to help solve your most troublesome water supply problems. The American Rolling Mill Co., Pipe Sales Div., 1021 Curtis St., Middletown, Ohio.

ARMCO STEEL PIPE

ARMCO



MEETS A. W. W. A. STANDARD SPECIFICATIONS

(*Continued from page 10*)

Did you get your Supplementary Cheese Ration? As a water works man you are entitled to extra cheese, that is, if you are in Britain. Of course, if you are in the "good old U.S.A.," you are only fretting a little about the mild, almost pointless, cheese rationing, and can hardly appreciate the sharpness of the cheese or food situation exemplified by the following British rationing regulation—to get additional cheese to 6000 water works employees:

Supplementary Cheese Ration.

"The members of the Association will be aware that the Association in conjunction with the Trade Unions had for some time past been endeavouring to ensure that certain classes of the employees should be in a position to obtain supplementary cheese rations. A considerable period transpired before the Trade Unions and the Association were able to convince the Ministry of Food of the need for this measure, but on the 16th February, 1943, the Secretary was able to issue the following letter to all Water Undertakings:

(*Continued on page 14*)

WATER REFINING EQUIPMENT HEADQUARTERS
INDUSTRIAL—PROCESS
RAILROAD—MUNICIPAL—HOUSEHOLD

FILTERS Of All Types *and* Capacities . . . Gravity . . . Pressure

SOFTENING SYSTEMS
All Types *and* Capacities—Zeolites (*synthetic and natural*) and Lime and Soda

CHEMICAL FEEDERS (wet or dry)
Acids . . . Hypochlorites . . . Alkalies

EQUIPMENT FOR REMOVAL
Of Iron . . . Taste . . . Odors . . . Colors . . . Suspended Matter

SWIMMING POOL EQUIPMENT
AERATORS · DE-GASIFIERS
WATER TEST SETS
RE-CARBONATORS

The **AMERICAN WATER SOFTENER COMPANY**
WATER REFINING EQUIPMENT HEADQUARTERS
INDUSTRIAL · PROCESS · RAILROAD · MUNICIPAL
HOUSEHOLD, ETC.
322 LEHIGH AVE., PHILA., PA.

IF ALL THE B. & S. PIPE LINES THAT HAVE BEEN JOINTED WITH Tegul-MINERALEAD WERE LAID END TO END, HOW FAR WOULD THEY REACH ? ? ? ? ? ? ? ?

Darnedifweknow

but they'd surely cover a lot of ground.

Tegul-MINERALEAD makes joints that stand up under even the most strenuous conditions. So when you're out to lay B. & S. Water Lines, remember the jointing compound that comes in ingot form, seals extra fast, is easy and economical to use and delivers excellent joints. Write

THE ATLAS MINERAL PRODUCTS COMPANY of PA.
Mertztown • Pennsylvania

Tegul' **MINERALEAD**
For Jointing Bell & Spigot Main

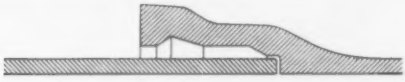
Clow-National

CAST IRON PIPE AND FITTINGS

CAN BE FURNISHED TO MEET THE REQUIREMENTS OF ALL EXISTING SPECIFICATIONS

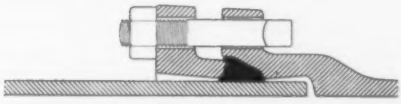
SUPER-deLAVAUD CENTRIFUGALLY CAST

The standard water bell is the most common type of cast iron pipe joint—popularly known as the "bell and spigot" joint. Available in sizes 3 to 24 inches inclusive, in 12 and 18-foot lengths, and for working pressures up to 250 pounds.



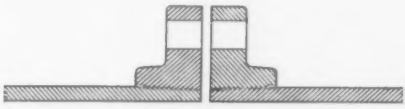
Standard Water Bell

A time-saving, easily installed mechanical joint cast iron pipe now used extensively. Made in all sizes from 3 inches through 24 inches, in 18-foot lengths, and for pressures up to 250 pounds.



"C-N" Mechanical Joint

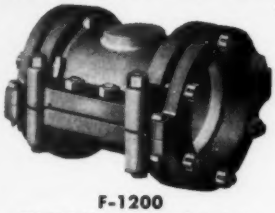
Cast iron flanged pipe is widely used for exposed pipe line work, inside and outside of buildings, for conducting water, steam, gas, oil and other fluids. Comes in same sizes and for same pressures as listed above, and in 12 and 18-foot lengths.



Flanged Joint

"C-N" MECHANICAL JOINT SPLIT REPAIR SLEEVE

NO LEADING OR CALKING—ONLY A RATCHET WRENCH NEEDED



F-1200
"C-N" Mechanical Joint
Split Sleeve

WHEN IT'S NEEDED, YOU'LL WANT IT ON HAND. Be ready to restore service in your water distribution system with a minimum of "shut-down" time for repairing any damage that may occur to an underground main—damage due to freezing, to water hammer or to external shock. Stock a few of our F-1200 "C-N" split repair sleeves in sizes to match the sizes of water main you have buried under your streets. Your men are helpless to make quick repairs in an emergency without the necessary tools and "repair specials" on hand. Be prepared.

See page 87 of catalog PIPE ECONOMY for complete detailed information

JAMES B. CLOW & SONS

201-299 N. Talman Avenue (P. O. Box 6600 A) **CHICAGO 80, ILLINOIS**

NATIONAL CAST IRON PIPE

(A Division of James B. Clow & Sons)

BIRMINGHAM 2, ALA.

Everything for the municipal water supply system

(*Continued from page 12*)

Dear Sir,

Supplementary Cheese Ration.

I am glad to be able to inform you that the Association in conjunction with the Trade Unions has now arranged with the Ministry of Food for a supplementary cheese ration to be available as from Monday, 15th February, 1943, in respect of employees of Water Undertakings where the following conditions obtain:—

(1) When there is no canteen at the place of work and the men fall within one of the following classes:—

(a) Men working on shift work or otherwise at pumping stations, filtration plant or water treatment plant.

(b) Men working on reservoirs, filters and anciallary works, etc.

(c) Men employed as mains and service workers, repair workers, labourers and watchmen where not less than fifty per cent. of their time is spent on work situated more than two miles from the nearest canteen or other place of refreshment of the class suitable for such men and more than half a mile from their home.

(d) Aqueduct and trunk main linesmen where they are normally more than two miles from the nearest canteen or other place of refreshment of the class suitable for such men and more than half a mile from their home.

(2) The ration may also be available to men not covered by the general classification above if a proper case can be made out showing that their position is as difficult as that of men in the above categories. The names of such men should be submitted to me and in approved cases they will be submitted to the Ministry of Food for consideration.

Procedure to Obtain the Supplementary Cheese Ration.

(a) Application should be made at the Local Food Office for a form of certification for a special supplementary cheese ration.

(b) The Chief Officer of the Undertaking must certify this form when completed; and

(c) This form must then be returned to the Food Office with the man's ration book and an insertion dealing with the extra cheese ration will be added to the ration book.

Yours faithfully,

LEONARD W. F. MILLIS,
Secretary.

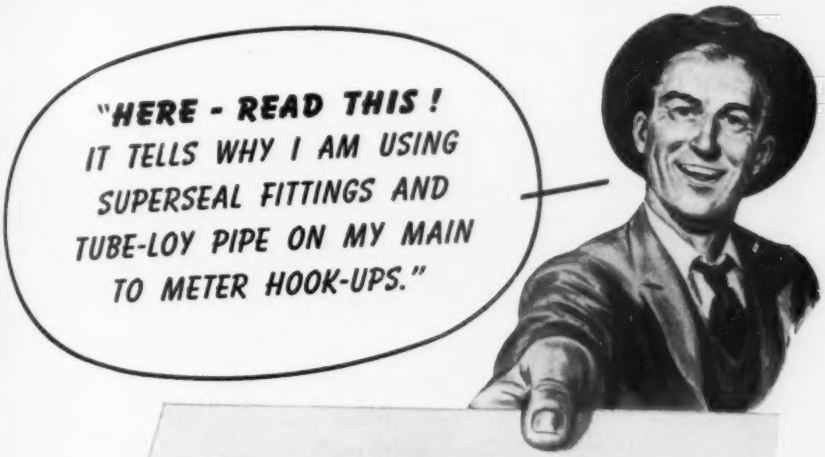
(*Continued on page 16*)

ZECO GREENSAND ZEOLITE

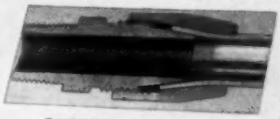
Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

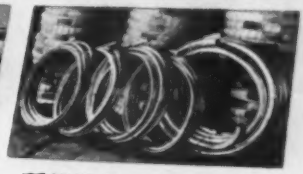
ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

ZEOLITE CHEMICAL CO.
90 WEST STREET **NEW YORK, N. Y.**



SUPERSEAL Flared Tube-Loy Fittings and ASARCO Type K Tube-Loy for Main to Meter Water Service





SUPERSEAL Flared Tube-Loy Fittings

Made of malleable iron, electro-galvanized.

Long tapered cone provides greater seating area for tubing flare . . . forms a leak-proof joint unaffected by vibration.

Three types available—tube to inside iron pipe thread . . . tube to outside iron pipe thread . . . tube to tube.

Tubing easily flared to SUPERSEAL's 10° angle with wood flaring top and tube holder.

ASARCO Type K Tube-Loy

Tubing extruded from a lead alloy . . . has all of lead's unequalled resistance to corrosion.

Uncoils readily and can be easily bent around obstructions.

Installation requires less effort than heavy walled lead pipe or relatively hard non-ferrous tubing.

Nominal sizes — ⅛", ¾", 1".
Stock coils — 30', 45', 60', 100'.

BOTH AVAILABLE RIGHT NOW

This combination, made of non-critical materials, offers the advantages of easy handling for fast installation, long life, leakproof connections and trouble-free service.

Call your nearby Grinnell Branch for complete information and catalog, or write Grinnell Company, Inc., Executive Offices, Providence, R. I.

GRINNELL

WHENEVER **PIPING** IS INVOLVED

(*Continued from page 14*)

"In considering this matter it should be pointed out that the Food Executive Officers of the Ministry of Food have instructions to issue extra cheese rations in receipt of applications in respect of waterworks employees 'who have been certified by the Chief Officer of the Water Undertaking as unable to take advantage of canteens and other catering facilities during the course of their work.' It would appear that some 6,000 employees in the water industry are benefiting under this scheme and that the employers and men are satisfied with the efforts of the Association in this matter."

Pittsburgh's Chamber of Commerce has taken issue with Army Engineer's plan of development of storage reservoirs on the rivers above the city. Among the findings of the Special Committee of the Chamber the following statements (quoted from the Oct. 14 *Pittsburgh Post Gazette*) appear:

"Pittsburgh's 'river of acid,' the Allegheny, from which the city drinks, can be neutralized with alkaline water from the proposed Warren dam, but this benefit to local water users will be delayed indefinitely unless the dam is given priority over the proposed Conemaugh dam, according to a Pittsburgh Chamber of Commerce committee of engineers.

"Construction of the Warren dam, 200 miles above Pittsburgh, as soon as possible after the war not only will solve the city's acid water problems, the committee asserts in its report, but it also will make the entire length of the Allegheny adaptable for industrial and recreational development.

"The benefits incident to the Warren dam affect millions of people along the Allegheny and Ohio rivers. The benefits incident to the Conemaugh dam, simply as a flood abatement project, affect the relatively small percentage of this population who live within flooded areas.

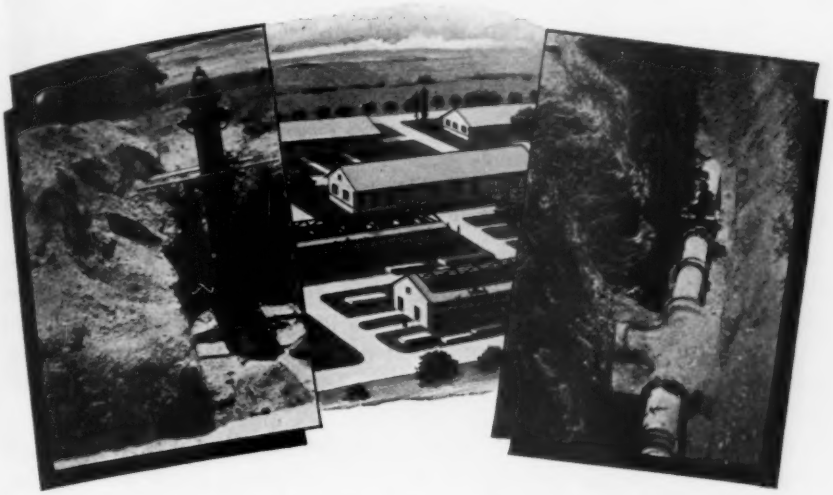
"The present priority schedule, set up by army engineers who consider the two dams chiefly as flood control structures, calls for construction of the Conemaugh dam—to store 'acid' water—as soon as possible after the war, and the Warren dam—storing the alkaline water Pittsburgh needs—at some indefinite time later.

"The Conemaugh dam, to be built 57 miles above Pittsburgh on the Conemaugh river, it is estimated, will make a differential of only about one foot in possible flood stages here. The Warren dam will provide approximately the same flood stage differential. But in addition, the engineers believe, it will solve Pittsburgh's increasingly serious domestic and industrial water problems.

"The need for improving Pittsburgh's water has been considered many times in the past, most recently in a proposal by Mayor Scully that

(*Continued on page 18*)

Looking ahead with Asbestos



SITUATION: Rush job on housing project for huge commercial truck farm.

WANTED: Quick action on installation of dependable water supply mains.

ANSWER: K&M "Century" Asbestos-Cement Pipe.

Labor was to be brought in to this immense vegetable farm to harvest, process and quick-freeze crops needed to feed both the armed forces and civilians. Housing facilities had to be built *in a hurry!*

Along with the rapid construction of homes, the need for speed called for dependable, quickly-laid water supply lines . . . And the ready answer to that was K&M "Century" Asbestos-Cement Pipe . . . Thousands of feet of "Century" were laid and in service before the houses were completed!

It's the light weight, easy handling and quick adaptability of K&M "Century" Pipe that make installation so simple, rapid and economical. And it's "Century" Pipe's resistance to corrosion, tuberculation and electrolysis that assures you of a lifetime of practically maintenance-free service.

We are now breaking all records for the production of "Century" Asbestos-Cement Pipe at K&M. Consequently, we can fill your order promptly.

Research goes steadily on in our laboratories, to broaden the role of asbestos in the "V" years ahead.

* * *

Nature made asbestos;
Keasbey & Mattison, America's asbestos pioneer,
has made it serve mankind . . . since 1873

ARMY E NAVY

K&M best in asbestos

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

★ Our Ambler plants proudly fly the Army-Navy "E" flag—an honor awarded K&M employees "for outstanding production of war materials."

(*Continued from page 16*)

waters of French Creek be brought here by a viaduct that would cost an estimated $105,000,000, and would mean scrapping of the city water plant.

"The aqueduct plan, as proposed by Mayor Scully, would be financed by Pittsburgh taxpayers—to the tune of $105,000,000. And such expense, the Chamber of Commerce committee asserts, is not justified in view of the claim that the Warren dam, to be built by the Federal Government, would require no physical changes in the city's water system."

The recommendations of this Special Committee of Engineers merit the fullest consideration by the Corps of Engineers. If, as the report indicates, there is little or no difference in the flood protection afforded by the two dams, the one which would serve the city's water supply better should be built first, and as promptly as possible. Since both dams are Federal projects, priority in construction should be based upon the multi-purpose values involved.

Quigley Company, Inc., has announced the removal of its general offices to new enlarged quarters at 527 Fifth Avenue (Bankers Trust Bldg., Corner 44th St.), New York 17, N.Y.

(*Continued on page 20*)

M H

HIGH QUALITY
VALVES
HYDRANTS

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34. Address M & H Valve and Fittings Company, Anniston, Alabama.

"We do not test meters where consumers keep within minimum rates"

Why not?

Here is a leak of ⅛th gallon per minute — not at all unusual; in fact, many are larger. A leak of this size will run away 180 gallons a day or 16,200 gallons a quarter — an amount sufficiently above the average minimum to make meter testing and repairing pay.

Figure it out for yourself

	TYPICAL WATER WORKS	YOUR WATER WORKS
Waste per quarter at ⅛ gallon per minute..	16,200 gal.	
If repaired meter registers 80% of this.....	13,000 "	
Deduct minimum allowance	7,500 "	
Amount registered above minimum.....	5,500 gal.	
Price for 1,000 gallons.....	X.24	
Revenue above minimum for quarter.....	$ 1.32	

Properly repaired water meters should register 90% at ¼ gallon per minute. Even though some of these may not do as well as 80% at ⅛ gallon per minute it is fair to assume that the increased accuracy above this rate will more than compensate for the difference. The customer billed for an extra $1.32 per quarter would probably repair the leak. But here again the Water Department is ahead of the game, because it has saved the pumpage of water for which it had not previously been paid.

Ask your Trident representative for the benefit of his experience in the proper methods of repairing and testing meters.

76

NEPTUNE METER COMPANY • 50 West 50th Street • New York 20, N. Y.

Branch Offices in CHICAGO. SAN FRANCISCO. LOS ANGELES. PORTLAND. ORE.. DENVER. DALLAS. KANSAS CITY. LOUISVILLE. ATLANTA. BOSTON.

" Neptune Meters. Ltd.. Long Branch. Ont.. Canada

(*Continued from page 18*)

"Public Administration Libraries" is a manual of practice recently added to the list of publications of the Public Administration Service, 1313 East 60th St., Chicago 37. Designed for use by special libraries, public officials and governmental units, it is labeled PAS Publication No. 75 and priced at $1.50.

Another PAS publication is *A Library Classification for Public Administration Materials* priced at $6.00.

British humor and health in wartime are variously reflected in the following quotation, complete from the British *Water and Water Engineering* for September 1943:

"'A New Explanation of Illness.' By K. Cookson. 64 pp. 7¼ in. by 4¾ in. Price 5s. net.

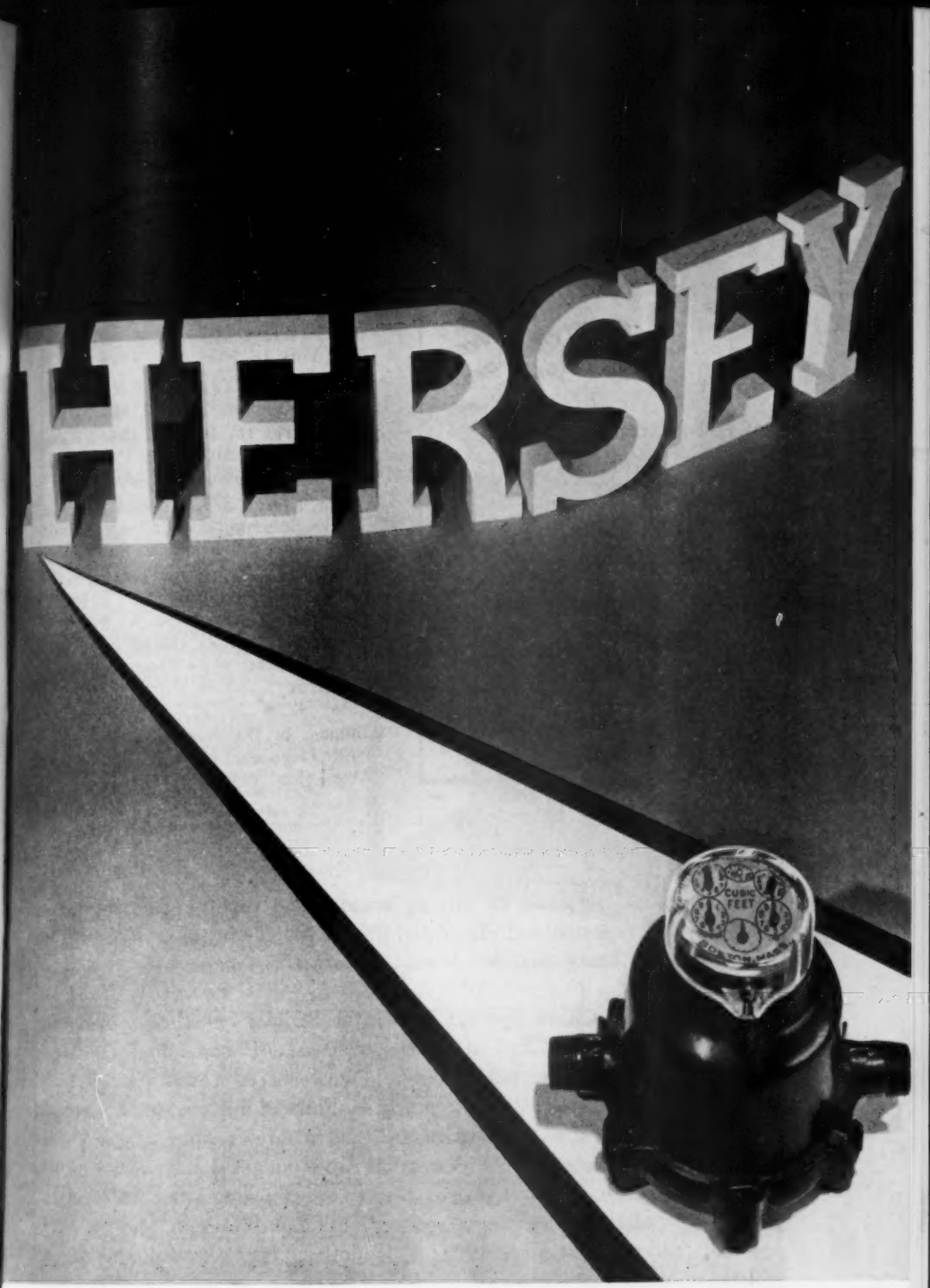
"Some years ago a book entitled 'How to be Happy Though Married' attracted the attention of a good many unfortunate men and the title of the book before us may prove to be alluring. It is: 'A New Explanation of Illness,' written and published by K. Cookson, and is no ordinary one. The author is somewhat discursive and does not always write quite clearly, but he manages to make his message quite plain even if it is unadorned. Although the book is short—there are 64 pages in all—we have references to tests, cures, epidemics, cancer, etc., with an appendix in which the author gives us information and advice on pig breeding, control of sex, etc.! A chapter on the medical attitude is somewhat amusing, although the author does not intend to be humorous, and he records his experiences without much bitterness although he obviously has had some saddening interviews. He says his efforts have been in vain and have 'wasted much time' (a surprising admission, but Mr. Cookson is never disingenuous) and so he has been driven to writing a book in the hope of 'bringing to light a Truth.'

"Waterworks engineers are not mentioned, but they should be humbled to read (p. 38) the somewhat ambiguous words 'measures will be taken to ensure the purity of our water supplies, as this is the main cause of most of our illness.' The author is not afraid to prophesy: 'Steps will be taken by the great water companies to alter the methods of water purification.' *The* methods: not *their* methods, so engineers of boards and corporations will have to toe the line set by the companies.

"'Conclusion (p. 64). When our water supplies are above suspicion diet becomes of secondary importance.' A nasty knock, but the author seems to suggest that those to blame are the Houstons and others who may hold 'the standard view, viz., that unless the water contains livings germs it can hardly be suspect. . . . Distilled water or other pure water in restaurants and hotels . . .' (p. 38). 'The prospect is dazzling' (p. 39).

"We may leave it at that."

(*Continued on page 36*)



The name HERSEY stamped on your water meters is the best guarantee you can have that these meters will do their job year in and year out accurately and at a minimum of maintenance cost. More than half a century in the water meter business backs up this guarantee.

HERSEY MANUFACTURING COMPANY

SOUTH BOSTON, MASS.

BRANCH OFFICES: NEW YORK—PORTLAND, ORE.—PHILADELPHIA—ATLANTA—DALLAS—CHICAGO—SAN FRANCISCO—LOS ANGELES

Meter Boxes
Meter Testers
Meter Yokes & Couplings

Valve Boxes
Service Boxes
Manhole Covers

Street Castings
Special Castings

H. W. CLARK COMPANY
Mattoon, Illinois, U. S. A.

(*Continued from page 34*)

Green, T. C., City Filtration Plant, Austin, Tex. (Apr. '25)★

Holdrege, Charles F., Eng. Dept., Metropolitan Utilities Dist., 18th & Harney Sts., Omaha, Neb. (Oct. '34)★

Johnson, Eric F., Assoc. Editor, American Water Works Assn., 500—5th Ave., New York 18, N.Y. (Jan '42)★

Moore, Herbert, Engr., 1742 N. Prospect Ave., Milwaukee 2, Wis. (July '28)★

Nally, Harvey D., Jr., San. Engr., Kanawha County Health Dept., 1544 Lee St., Charleston, W.Va. (Affil. Jan. '42)★

Paulson, Everett J. I., Chemist Operator, Fridley Softening Plant, 43rd & Marshall Sts., N.E., Minneapolis, Minn. (Jan. '41)★

Romer, Harold, c/o Block, 1317 E. 8th St., Brooklyn 30, N.Y. (Apr. '43)★

Wagner, E. G., Public Health Engr., Div. of Sanitation, State Dept. of Health, University Campus, Minneapolis, Minn. (May '42)★

Williams, L. O., Jr., State San. Engr., State Dept. of Public Health, Cheyenne, Wyo. (Jan. '36)★

(*Continued from page 20*)

Two basic methods of raising water—the turbine and by hypocycloidal—are reported and illustrated in a new bulletin, No. 141A, issued by the Peerless Pump Co., 301 West Ave. 26, Los Angeles 31.

"Integrated Chart System of Water Supply" is a fine brochure by M. J. McLaughlin, Chief of Bureau of Water, Philadelphia. It is exceptional for its detailed tabulations and flow sheets which, though technical, at the same time will make much of Philadelphia's water operations interesting and lucid to keen citizens. Laid in are: a page of pie charts showing what becomes of the Water Bureau's budget dollar; maps of the water and sewage works; and two charts, one showing since 1860 Philadelphia's population, water pumpage, per capita consumption, and the average daily filter output since 1903; and another chart showing the decline in typhoid deaths since 1860.

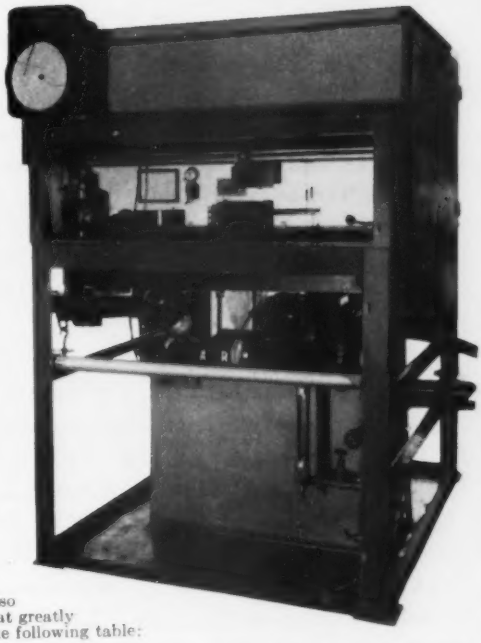
The Chicago Technical Service office of the General Chemical Co. has been moved from 105 West Madison St. in Chicago to 3357 W. 47th Place, Chicago 32.

(*Continued on page 38*)

Cincinnati Saves With

TENNESSEE CORPORATION ferri-floc FERRIC SULPHATE

Through accurate feeders like this one pass 3,600,000 lbs. of FERRI-FLOC every year, saving the City of Cincinnati more than $17,000.00 on its annual water bill.



Here is a brief review of the studies that led to the finest clarified water Cincinnati has ever had and, at the same time, sliced the municipal budget.

Cincinnati takes its raw water from the Ohio River, which at this point is very aggressive, making pH correction essential. When in conjunction with pH correction, Alum provides a very poor coagulation unless lime is introduced immediately prior to filtration or immediately after filtration. Consequently, lime and copperas were used for years; but the following difficulties were always evident:

1. Caking in storage bins.
2. Absolute necessity of feeding lime at *all* times.
3. A slightly smoky and faintly colored clarified water.
4. Uneven feeding of the copperas used as coagulant.

These ever-present difficulties led the Municipal Water Works of Cincinnati to undertake a series of experiments to find a more satisfactory coagulant. In the course of a year's research, several coagulants were tried; but FERRI-FLOC was found not only to overcome all previous difficulties but also to produce a superior coagulated water at greatly reduced costs. Findings are given in the following table:

FERROUS SULPHATE		COAGULANT A		FERRI-FLOC		COST $/Mg.	SAVING
Dosage gr./gal.	Turbidity ppm.	Dosage gr./gal.	Turbidity ppm.	Dosage gr./gal.	Turbidity ppm.		
1.25	5.0	.87	4.3			1.78 1.57	.21
1.25	5.4	.63	4.0			1.78 1.13	.65
		.63	4.0			1.13	.25
		.75	4.0	.63	4.0	.88	
				.75	4.0	1.35 1.04	.31

It is notable that lower dosages of FERRI-FLOC are required in spite of the fact that its iron content is no greater than that of ferrous sulphate.

The City of Cincinnati is to be congratulated upon the completion of these excellent studies.

TENNESSEE CORPORATION

ATLANTA, GEORGIA LOCKLAND, OHIO

(*Continued from page 36*)

REPORT OF SOUTHWEST SECTION MEETING

The Southwest Section, A.W.W.A., met at the Hotel Biltmore, Oklahoma City, Okla., October 11–13, for its 32nd annual meeting. There were 390 registrations including nearly 100 ladies. Fifteen new members were secured.

Guests of honor were: Sam F. Newkirk Jr., Vice-Pres. of the A.W.W.A., and Charles Barry of the Badger Meter Co. who not only was a charter member of the Southwest Water Works Association (later Southwest Section) organized in 1912 but also has attended each of our 32 annual meetings with only one exception.

Our host, M. B. Cunningham, Supt. and Engr. of the Oklahoma City Water Works, and his associates directed and conducted a highly successful wartime conference. As a prelude to the meeting Mr. Cunningham presided at a banquet Sunday night October 10, to which were invited the chairmen of all local committees together with the officers of the Section. At this preliminary meeting the work of the officers and committee chairmen were co-ordinated.

On Monday, October 11, the conference got under way at 10:00 A.M. with L. A. Jackson, Chairman, presiding. We were welcomed by the Mayor and shortly thereafter went into our technical sessions. H. Lloyd Nelson, Principal Engr. for the Water Div. of WPB's Office of War Utilities, on loan from his job as Eastern Sales Mgr. for the U.S. Pipe & Fdry. Co., started the program with a fine paper on conservation and thereafter for three days from 9:00 A.M. to 4:30 P.M. we had the privilege of listening to many nationally-known water works men, manufacturers, government representatives, and military experts including Newkirk, Fife, Billings, Hansen, Walker, Smith, Fugate, Long, Bretz, Wolfe, Freese, Preston, Aurand, Robertson, Hagen, Vandivier, Averett, Schwob, Ullrich, Hopkins, Jewell, Filby, and Jones. The meetings were exceptionally well

(*Continued on page 40*)

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Back the Attack

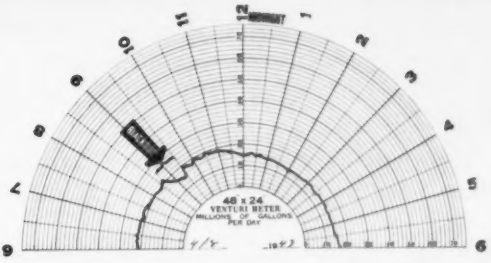
WITH WAR BONDS

STUART-BRUMLEY CORP., 516 N. CHARLES ST., BALTIMORE-1, MD.

STUART–BRUMLEY

ACTIVATED ALUM • BLACKALUM • PALMER FILTER BED AGITATORS

THE MASTER WORKS THROUGH A BLACKOUT



The sirens started shrieking in Portland, Maine, at 8:45 in the evening. Business was interrupted, industry slowed up, folks at home sat it out in their easy chairs.

The 48-inch Venturi Master Meter of the Portland Water District, *through which all water to its distribution mains is measured*, however, kept faithfully at work, indelibly writing out the effect of the blackout on the water consumption. The flow rate dropped rapidly from 20 to 16 million gallons per 24 hours, then more slowly to 15 million, and finally rose immediately to 19 million when the "All Clear" came in at 9:30, as shown by the Venturi Chart.

EVERYWHERE VENTURI MASTER METERS ARE DAILY REVEALING IMPORTANT CHANGES IN WATER SUPPLY AND CONSUMPTION.

Make *your* main line metering problems *ours*. Builders-Providence, Inc. (Division of Builders Iron Foundry), 9 Codding Street, Providence 1, R. I.

AWARDED ARO. 1st. 1942 STAR AWARD MAY 9th. 1943

Sincerely Yours,

BUILDERS
RECORDING-INDICATING-CONTROLLING
Instruments

BUILDERS-PROVIDENCE

(*Continued from page 38*)

attended. The speakers without exception talked on current subjects, pertinent to wartime water works operation and the interest was extraordinary, evidenced by lengthy discussion from the floor so extended that in order to keep on schedule discussion had to be curtailed.

Thirty manufacturers exhibited at the conference with keen interest on the part of all. A large number of water works men took advantage of the opportunity to visit and inspect Oklahoma City's new Bluff Creek Reservoir Project.

Fine entertainment was enjoyed by all and included noon-day luncheons, dances, a buffet supper and variety show, and ladies luncheons. On Wednesday night the Manufacturers Association complimented the group with the annual Dinner-Dance which was a grand success with 300 present. This outstanding affair was managed by a committee of manufacturers with Egmont S. Smith as Chairman.

Leslie A. Jackson from Little Rock, Ark., was selected for the George W. Fuller Award.

The following officers were elected: Chairman, Robert W. Harding, San Antonio, Tex.; Vice-Chairman, A. H. Ullrich, Ft. Smith, Ark.;

(*Continued on page 42*)

JOINTS

Any Man Can Make

No skilled labor needed to lay permanent mains with

McWANE 2" CAST IRON PIPE

with THREADED *joints*

All you need is a wrench . . . all you do is screw 'em together. An easy, quick job that saves time, labor, money. Investigate!

McWANE CAST IRON PIPE CO.
Birmingham 2, Ala.

Vogt Fire Hydrants

Standard—
"Traffic Model"—
Flush Type—
Water Crane—
Type

Vogt Gate Valves

Non-Rising Stem—Outside Screw and Yoke—Hub End—Flanged End—Ends to Fit any Type Pipe.

Also—Floor Stands, Shear Gates—Tapping Sleeves and Valves, Flap Valves and Mud Valves.

Vogt Brothers Mfg. Co.
INCORPORATED
MAIN AT 14th ST.
LOUISVILLE KENTUCKY

Post-War Palatability WITH OZONE

Ozonation to remove taste, odor and color in drinking water, *with sterilization as a plus value,* is an outstanding post-war possibility for the water purification industry.

Today, the critical metals needed to build our dependable, efficient, large capacity ozonation equipment have gone to war, but our ozonation research and development program is producing "know how" data of the utmost future importance.

We solicit correspondence from those in the water works industry who are interested in a better and simpler way to solve their taste, odor and color problems.

Write for Literature

OZONE PROCESSES INCORPORATED

1500 WALNUT STREET, PHILADELPHIA 2, PA.

A wholly owned subsidiary of Welsbach Engineering and Management Corporation

(*Continued from page 40*)

Secretary-Treasurer, George J. Rohan, Waco, Tex.; and Trustees, Edward R. Stapley, Stillwater, Okla., E. F. Byerley, West Helena, Ark., Charles A. Boutall, Metairie, La., and A. S. Hatch, Houston, Tex.

The Publication Committee is: Egmont S. Smith, Dallas, Tex., M. B. Cunningham, Oklahoma City, Okla., and B. G. Cole, Monroe, La.

October 16–18, 1944, were selected for our next meeting with the place to be determined later.

GEORGE J. ROHAN
Secretary-Treasurer

"Salvage Manual for Industry" is reported as the first comprehensive manual on industrial salvage ever prepared. It is well illustrated and was prepared by a board of practical industrial salvage engineers and business paper editors. It has 26 chapters grouped into 6 major sections. There are: 2 chapters on organizing and planning the salvage department; 3 on the administrative factors; 12 on methods of handling (finding, identifying, segregating, collecting, reclaiming, storing, selling, etc.) metal scrap; 3 on non-metallic waste; 7 case histories demonstrating exemplary practice; a 17-page compilation of practical hints for handling specific waste materials; and a 9-page index. It is paper bound, 6x9-in. size, 250 pp., and available at 50 cents per copy from the Superintendent of Documents, Government Printing Office, Washington, D.C.

Pennsylvania Salt Mfg. Co. has acquired Whitemarsh Hall, the 150-room residence of the late Edward T. Stotesbury, for conversion into a scientific research laboratory. Leonard T. Beale, Pres. of Pennsylvania Salt, says that no manufacturing or commercial operations of any kind will be carried on in the building, that the exterior and the grounds will be maintained as they were when the residence was a show place of the Philadelphia environs, and that 75 chemists and their assistants will work in the converted building.

(*Continued on page 44*)

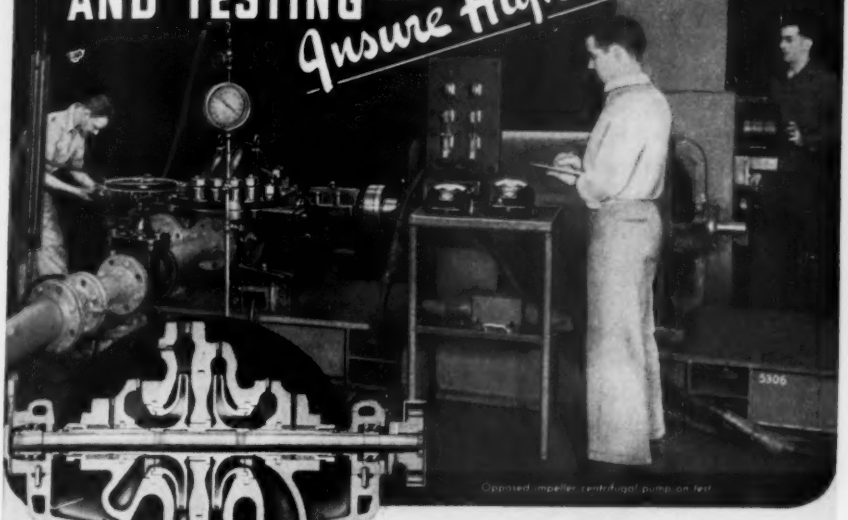
NIAGARA IRON CASE WATER METERS

provide wartime copper conservation plus the time-proved Niagara design. They comply with victory-meter limitations. Works are interchangeable with American Bronze Case Meters.

WRITE FOR CATALOG.

BUFFALO METER COMPANY
Established 1892 2914 Main St., Buffalo, N.Y.

RIGID INSPECTION AND TESTING — *Insure High Quality*



Opposed impeller centrifugal pump on test

Axial section of the pump

The highest quality of engineering design and of workmanship has always been the ideal of the De Laval Steam Turbine Company. High grade machines can be produced only by care in selecting and purchasing materials and by the use of specialized equipment, including precision tools, gages, jigs and measuring devices, followed by limit-gage inspection of finished surfaces and by thorough testing of completed units.

The testing here shown of a two-stage De Laval Pump is typical of the routine testing of De Laval centrifugal pumps. The pump is driven by a calibrated motor and accurate readings are made of speed, pressure, delivery and power consumption over the working range. The unit is then dismantled and all working surfaces are again inspected and checked. In some cases a torsion meter is used for determining input.

A similar procedure is followed with De Laval steam turbines, helical and worm gears, centrifugal compressors, and rotary displacement oil pumps.

The testing equipment includes suitable gages and meters for measuring power and fluids of all kinds and at various pressures and temperatures, also plant for generating steam at high pressure and temperature and for producing high vacuum.

M-34

De Laval STEAM TURBINE CO.
TRENTON 2, N.J.

MANUFACTURERS OF TURBINES . . . STEAM HYDRAULIC PUMPS . . . CENTRIFUGAL GLOBOLESS ROTARY DISPLACEMENT, MOTOR-MOUNTED, MIXED-FLOW PROPELLER; PRIMING SYSTEMS; CENTRIFUGAL BLOWERS and COMPRESSORS; GEARS . . . WORM, HELICAL and FLEXIBLE COUPLINGS

(*Continued from page 42*)

REPORT OF WISCONSIN MEETING

The Wisconsin Section of the A.W.W.A. and the Engineering Society of Wisconsin held a joint wartime conference in Milwaukee, October 19–21, with headquarters at the Hotel Pfister. This was the twenty-first Annual Meeting of the Wisconsin Section, which program took place on October 19 and 20. It was the thirty-fifth Annual Meeting of the Engineering Society, which program was held on October 20 and 21, the afternoon of October 20 being a joint session.

The officers for the Wisconsin Section for 1944 are as follows: Chairman, Jos. C. Schwada, City Engr., Milwaukee; Vice-Chairman, Blaine Page, Supt., Water Dept., Shawano; Directors: O. J. Muegge, Asst. State San. Engr., and Harry Londo, Supt., Water Works, Green Bay; and Secretary-Treasurer, Leon A. Smith, Supt., Water Works, Madison. The term of A. P. Kuranz as director of the A.W.W.A. will not expire for two years.

The Fuller Award Committee recommended the selection of Joseph C. Schwada, City Engr. of Milwaukee, and H. H. Brown, Supt. of Water Works of Milwaukee, as co-awardees from Wisconsin for the year 1943.

(*Continued on page 46*)

EDSON
DIAPHRAGM PUMPS
Hand Operated--sizes 2", 2½", 3", 4"
Power Operated--sizes 3" and 4"
Open Discharge or Force Pump
Skid, Truck or Trailer Mounted
COMPLETE PUMP OUTFITS
Edson Pumps - Suction Hose
Brass Couplings - Bronze Clamps
Red Seal Diaphragms
Brass Strainer or Foot Valve
Hose Spanners - Adapters - Etc.
Also—Brass Hydrant Pumps
THE EDSON CORPORATION
Main Office and Works: 49 D St., South Boston, Mass.
New York, 142 Ashland Pl., Brooklyn

Prevent Rusting

Rusta Restor cathodic protection, provides *permanent protection* against rusting of water tanks, piping and steel structures of all kinds.
Initial cost of a complete equipment is about equal to the cost of a good paint job. . . . Operation costs only about 2 mills (i. e. $0.002) per year per square foot of surface protected.
If your tanks and steel structures are not now protected by this proven low cost method, they should be. No obligation. Send for fully descriptive literature today.
RUSTA RESTOR
Division of
THE JOHNSTON & JENNINGS CO.
862 Addison Road Cleveland, Ohio

Battery of four Graver Iron Removal Filters installed at a Minnesota municipal plant

IT'S A NUISANCE, any way you look at it—that rusty red stain that discolors bath tubs, bowls, and sinks. Furthermore, it's a constant source of trouble and expense, for iron in the water causes clogged drains and corroded plumbing.

But—it's a condition that can be easily corrected. Graver Iron Removal Filters will not only remove the iron from a municipal water supply, but even the finest particles of suspended matter will be eliminated. Result—clear, filtered water that will meet the most rigid requirements.

Graver Iron Removal Filters are serving American communities in all parts of the country. They're demonstrating their ability to do a thorough, efficient job at low cost. And they can do the same for you.

Our engineers will gladly discuss your problems with you and submit quotations without obligation.

GRAVER

WATER CONDITIONING EQUIPMENT

43-47W

GRAVER TANK & MFG. CO., INC.

4809-45 TOD AVE., EAST CHICAGO, IND.

NEW YORK CATASAUQUA, PA. CHICAGO TULSA

Graver designs, builds and installs all types of water conditioning equipment including:

Hot Process Water Softeners • Zeolite Water Softeners • Water Filters • Iron Removal Filters • Taste and Odor Removal Filters • Oil Removal Filters • Sewage Treatment Equipment

(*Continued from page 44*)

Whether or not a conference will be held next year, and the meeting place, if a conference is to be held, will be decided by the Board of Directors.

The total attendance was 330, of which 255 were registered for the Wisconsin Section meeting, and 75 for the Engineering Society meeting, although many water works men were also members of the Engineering Society.

The greetings of the Mayor of the City of Milwaukee, Hon. John L. Bohn, were given at the joint session Wednesday afternoon.

General Session

The first item on the program was a talking movie entitled "The Ominous Case" and presented by the State Board of Health of Wisconsin. This movie showed the dangers of back-siphonage and indicated that there was a liability to the owner of property who had been notified that the plumbing in the property did not meet the modern sanitary codes.

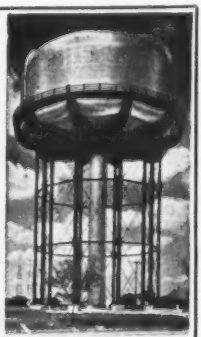
Chairman O. J. Muegge, Asst. State San. Engr., called attention to the fact that the membership of the Wisconsin Section was 117, whereas the quota fixed by the A.W.W.A., was only 112. He showed a curve giving the growth of all Sections and the increase in the registration from year to

(*Continued on page 48*)

NO MORE RUST

Will Form Inside Your Steel Tanks If You Use

"RUSTOP"



STOPS CORROSION—Immediately, Permanently, and **ECONOMICALLY**. No Sandblasting, Scraping or Painting. Many Types of Special Applications.

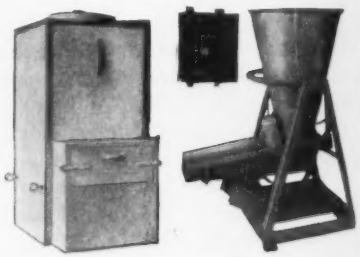
Write immediately for complete data and quotations—No obligation.

THE APPROVED METHOD

RUSTOP THE CATHODIC SYSTEM OF CORROSION PREVENTION

ELECTRO RUST-PROOFING CORP.
DAYTON • OHIO

SYNTRON



DRY CHEMICAL FEEDER MACHINES

Give YOU

Rheostat Control of Feed—
Vibrated Supply Hoppers—
No Moving, Wearing Parts—
Low Initial and Operating Costs

Write us about your Dry Chemical Feeding Problem

SYNTRON CO. 428 Lexington Ave. HOMER CITY, PA.

"Important to my family—

that?"

Yes, madam, because it's one of the reasons why good water—free of hardness, dirt and iron—will be easier than ever for your city to enjoy after the war. It's Permutit's* new "Spiractor" for softening municipal water supplies by the cold lime method. It cuts detention time to as low as 5 minutes, leaves no sludge to be disposed of. It's economical, makes big savings in steel and space. And it's simple to operate!

BETTER WATER MEANS HAPPIER CITIES—*blue print now!*

Full details of the "Spiractor" and other equipment to filter and soften water, or to remove iron, are available upon request to The Permutit Co., Dept. G2, 330 W. 42nd St., New York 18, N. Y. In Canada: Permutit Co. of Canada, Ltd., Montreal.

* Trademark Reg. U. S. Pat. Off.

PERMUTIT

WATER CONDITIONING HEADQUARTERS

(*Continued from page 46*)

year. A very active Membership Committee is serving and it is hoped that the membership will be substantially increased during the coming year.

The first paper was a joint paper prepared by J. P. Schwada, City Engr. of Milwaukee, and Edward Tanghe of the City Engineer's office of Milwaukee, outlining the factors entering into the determination of water rates. The City of Milwaukee has had a case pending before the Public Service Commission of Wisconsin for several years—the decision having just been reached within the last year or so. In this paper the authors showed the effect of the distance factor and presented information as to carrying capacities of mains serving the outlying areas, all of which affect the proper rate schedule.

The next paper—by L. R. Howson, former Pres. of the A.W.W.A. and Cons. Engr.—called attention to the value of storage in reducing the pumping capacity necessary to meet peak demands. He also called attention to the desirability of using cement lined pipe and recommended the thick type of lining. This resulted in a spirited discussion participated in by H. Lloyd Nelson, Cons. Engr. for the Water Div. of the Office of War Utilities and formerly Eastern Sales Mgr. of the U.S. Pipe & Fdry Co., and Clarence Gruetzmacher, Distr. System Engr. of the Milwaukee Water Dept., both of whom felt that a thinner lining was superior in many respects, particularly since the mixture in cement grout was changed to include 50 per cent sand in place of 25 per cent sand in the cement mix.

Purification Session

Harry E. Jordan, Secretary of the A.W.W.A., attended the luncheon meeting and addressed the group immediately after luncheon. He explained that water utilities were permitted to continue existing valve and hydrant replacement programs if they could do so within the WPB inventory limitation. He stated that the manpower situation was becoming more acute and would really be more serious next year. He gave several instances of methods of saving labor, such as reading meters less often and

(*Continued on page 50*)

AMERICA'S MOST AMAZING PUMP
PEERLESS
HI-LIFT PUMP
Manufactured under R. Moineau's Patents, U. S. 1892317 and 2028407. Canadian Patents 352574. By exclusive license to Robbins & Myers, Inc.
...Unique chrome rotor literally squeezes water uphill.
FOR DEEP WELLS 4" OR LARGER
500 TO 3500 GALLONS PER HOUR
ASK FOR LITERATURE
Also available: turbine and propeller types; capacities up to 100,000 g.p.m.
PEERLESS PUMP DIV. • Food Machinery Corporation
Factories: Los Angeles, San Jose, Fresno, Calif. and Canton, Ohio

Filter Sand and Gravel
WELL WASHED AND CAREFULLY GRADED TO ANY SPECIFICATION.
PROMPT SHIPMENT IN BULK OR IN BAGS OF 100 LB. EACH.
Inquiries Solicited.
Northern Gravel Co.
P. O. Box 307, Muscatine, Iowa

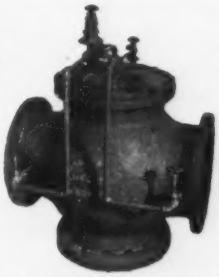
1879—ROSS—1879
AUTOMATIC VALVES

ALTITUDE VALVE

Controls elevation of water in tanks, basins and reservoirs

1. Single Acting
2. Double Acting

Maintains safe operating pressures for conduits, distribution and pump discharge



SURGE-RELIEF VALVE

REDUCING VALVE

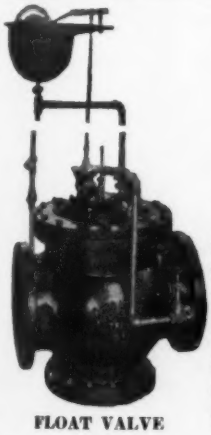
Maintains desired discharge pressure regardless of change in rate of flow

Regulates pressure in gravity and pump systems; between reservoirs and zones of different pressures, etc.

A self contained unit with three or more automatic controls

COMBINATION VALVE

Combination automatic control both directions through the valve.

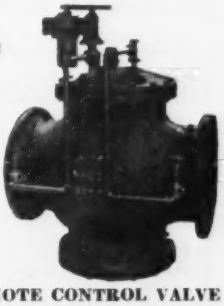


FLOAT VALVE

Maintains levels in tank, reservoir or basin

1. As direct acting
2. Pilot operated and with float traveling between two stops, for upper and lower limit of water elevation.

Electric remote control—solenoid or motor can be furnished



REMOTE CONTROL VALVE

Adapted for use as primary or secondary control on any of the hydraulically controlled or operated valves.

Packing Replacements for all Ross Valves Through Top of Valve

ROSS VALVE MFG. CO., INC., P. O. BOX 593, TROY, N. Y.

(*Continued from page 48*)

cutting out unnecessary services to the consumer. He emphasized that there was little labor waste in water utilities and almost no "feather bedding," a situation which makes it very difficult to reduce the personnel without seriously affecting the service.

F. H. Long, Chemist of the Wisconsin Electric Power Co. at Milwaukee, discussed conditioning water for steam production in high pressure boiler stations, calling attention to the fact that previous standards of alkalinity could be reduced and still provide not only a safe water for use in boilers, but also decrease depositions on steam turbines.

M. Starr Nichols, Chief Chemist of the State Laboratory of Hygiene in Madison, discussed the new drinking water standards with particular reference to the experience he had had at the State Laboratory, calling attention to the interpretations as being simply safe and unsafe, with no reference to the comparative results. He discussed the new 100-ml. samples. He called attention to the difficulty of getting suitable media at the present time. This was discussed by Dr. Ruchhoft of the U.S. Public Health Service, as well as several others who felt that time alone would determine whether the new standard should be continued, or new recommendations made.

(*Continued on page 52*)

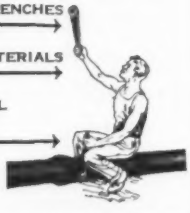
3 *Money, Time and Labor Saving Features of*

UNIVERSAL CAST IRON PIPE

LAID WITH ONLY WRENCHES

NO CAULKING MATERIALS

NO GASKETS. NO BELL HOLES TO DIG.



For water supply, fire protection systems, sewage disposal systems, industrial, and irrigation. Flexible.

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THE CENTRAL FOUNDRY COMPANY
386 FOURTH AVENUE, NEW YORK 16, N. Y.

Gentlemen: Send us information and catalog on UNIVERSAL CAST IRON PIPE.

NAME_____

STREET_____

CITY_____

SAFETY *with* SterElatorS by Everson

Everson SterElatorS are all equipped with the Rota-Meter Visible Gas Feed Indicator which actual tests have proved to be as high as 99.5% accurate in the measurement of continuous gas flow.

ACCURACY *with* SterElatorS by Everson

Everson SterElatorS mean greater safety. For in case of water failure or gas line leakage, the Vacuum regulator and shutoff valve automatically stops the gas flow.

EVERSON MANUFACTURING CO.

221 W. Huron St. **CHICAGO, U.S.A.**

What is all this talk about POST WAR PLANNING *and why is it so necessary?*

★ ★ ★ ★

At first glance many people are apt to question the *PATRIOTISM* behind the idea of making plans *NOW* for work to be carried out after the war. They feel all efforts should be directed toward *FIRST* winning the war.

★ ★ ★ ★

Well, there certainly should be NO slackening of effort in that direction but it is also very necessary to "win the peace" on the HOME FRONT. Our boys on the battle fronts *MUST* be assured of two things when they return: *JOBS* and the best possible *LIVING CONDITIONS.*

★ ★ ★ ★

Jobs MUST be created to cushion the shock of conversion from a state of war to a peace time economy.

★ ★ ★ ★

And surely *nothing* is more important to general living conditions than "an adequate, safe and satisfactory water supply."

★ ★ ★ ★

At the same time we can guard against a return to the days of "boondoggling" government financed projects. YOU can control your own projects; do WHAT you need to, WHEN you need to, and with the MATERIALS you think BEST.

★ ★ ★ ★

This, then, represents the *HIGHEST* form of patriotism. It is more than a *PRIVILEGE,* it is a *DUTY* we owe to our country and our community.

★ ★ ★ ★

So let's start now on DEFINITE plans. It's not too EARLY; it may be LATE!

★ ★ ★ ★

Let's prove American *INITIATIVE* is still on the job! Let's get those projects designed! Let's arrange the financing! Let's *BLUEPRINT NOW!*

★ ★ ★ ★

RENSSELAER VALVE COMPANY

TROY, N. Y.

(*Continued from page 50*)

John R. Baylis, Bureau of Engineering, Chicago, was to have discussed "Crenothrix and Red Water" in ground water supplies, but he was unable to be present because he was engaged in studies with reference to Polio virus in sewage. E. R. Krumbiegel, Health Comr. of Milwaukee, called attention to the fact that two virus diseases might be transmitted by water, one being Polio and the other hoof and mouth disease. With reference to Polio he said that scientific men are not sure as to just how this virus enters the human system. He indicated that epidemics reach their peak in the fall and drop off rapidly after the first frost. This would tend to indicate that neither water nor milk is responsible. In the discussion someone suggested that fresh fruit, which is consumed in large quantities at this time of the year, might be the cause but Dr. Krumbiegel stated this has not as yet been investigated. He said that he felt that considerable progress was being made in Polio treatments, as well as scientific work to discover how properly to handle the virus.

The Wisconsin Water Works Protection Committee and the Zone Co-ordinators held a meeting at 5:00 P.M., to discuss current problems.

The Schlitz Brewery invited the entire group to a buffet supper and entertainment at the Brewery without cost to the Section or its members.

(*Continued on page 54*)

DIFCO

Detection of Coli in Water

This group of Difco Dehydrated Culture Media is recommended for the detection and confirmation of the presence of coliform bacteria in water. Each medium is prepared to conform to all requirements of "Standard Methods of Water Analysis" of the A. P. H. A. and A. W. W. A.

Bacto-Lactose Broth
Bacto-Endo Agar
Levine's Eosin Methylene Blue Agar, Difco
Bacto-Brilliant Green Bile 2%
Bacto-Crystal Violet Lactose Broth
Bacto-Formate Ricinoleate Broth
Bacto-Fuchsin Lactose Broth

Specify "DIFCO"

DIFCO LABORATORIES
INCORPORATED
DETROIT, MICHIGAN, U. S. A.

ARMY E NAVY

HELLIGE TURBIDIMETER

This instrument can be used not only for turbidimetric analyses of water but also for sulfate determinations and measurements of suspended matter in various colorless or colored liquids, as found in many industries. Standard suspensions are not needed. Operates on the Tyndall principle. Determinations are made rapidly and with exceptional accuracy.

HELLIGE, INC.

3718 Northern Boulevard
Long Island City 1
New York

(*Continued from page 52*)

Round Table Discussion

H. Lloyd Nelson, representing the Water Div. WPB's Office of War Utilities, discussed the "Stop Waste" program for water utilities and answered questions as to WPB regulations. This information is too well known to be discussed at this point.

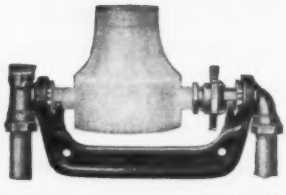
Maj. Wm. H. Carey, Regional San. Engr. of the Office of Civilian Defense, explained that the Internal Security Div. and the U.S. Public Health Service were inspecting certain plants to assist in improving the protection features both against sabotage and in the interest of public health. He called attention to the fact that the prime responsibility of these matters was vested in the local water superintendent or manager.

Dr. C. C. Ruchhoft of the U.S. Public Health Service showed a table classifying the different poison gasses and their effect upon drinking water, and gave demonstrations as to the methods of checking public water supplies for such contaminations.

A presentation by Arthur Wallace of the WPB Regional Utilities Control Branch, Chicago, covered the relationship of the Regional Utilities Control Offices and Water Utilities. He also answered many questions.

(*Continued on page 56*)

FORD YOKES



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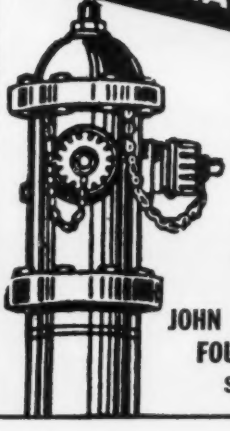

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(*Continued from page 54*)

The last paper of the morning session was postponed until the afternoon session because the group adjourned to join with the Engineering Society of Wisconsin to hear Prof. Glen Koehler of the Univ. of Wisconsin discuss some aspects of ultra high frequency radio. He outlined the theory of high frequency radio, showing how these waves were developed and propagated. He gave an actual demonstration of their transmission through tubular and rectangular conduits, showing that these waves would go around corners by the use of the same general type of fittings as is used in water works, and showed that valves could be inserted in the line to shut off current. He also demonstrated the method of picking up and returning these high frequency waves by the use of large discs, and at the end he said: "I think you can let your imagination determine what Radar is and how it works."

At the luncheon, Commander Herbert O. Lord of the United States Navy was the guest speaker and gave some interesting facts on the tremendous growth of the Civil Engineering Corps of the Navy, and some of the procedure used. He gave actual examples of the effectiveness of the new developments made by the Seabees.

(*Continued on page 58*)

SAVE FOR VICTORY

EVERYWHERE Americans are being asked to "SAVE FOR VICTORY." Water works superintendents, engineers and public officials can do more in this connection by investigating the National Method of water main cleaning. This method restores the carrying capacity of pipe to at least 95 per cent of that of new mains, thereby eliminating the necessity for purchase of new mains. Aside from this the National Method makes possible lower pumping costs, greater delivery, reduced insurance rates and clean water.

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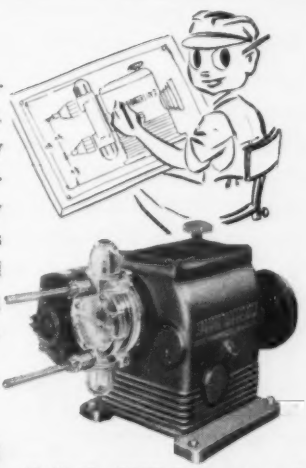
Thousands of boys in America's armed forces in remote and isolated places depend for pure drinking water on %Proportioneers% Pur-O-Pumpers, our portable water purification units. We at %Proportioneers, Inc.% are proud to have had a direct part in helping the war effort by supplying equipment to protect the health of our fighting men.

WE'VE DELIVERED

Now we can again make immediate deliveries from stock of the popular "Little Red Pump", our Heavy Duty Midget Chlor-O-Feeder. To fill wartime needs, we have increased our production and can now make deliveries on a pre-Pearl Harbor basis. Complete manufacturing facilities "under one roof" enable us to assure high quality and prompt deliveries.

WE'VE PLANNED

For the past ten years %Proportioneers, Inc.% has been intimately associated with waterworks engineers and operators. More than a thousand of these men have told us what they want in a chemical feeding unit. Many of their ideas are embodied in the design of the new %Proportioneers% Heavy Duty Chem-O-Feeder, shown at right. Here are two of its principal features: Chemical feeding rate may be selected and changed at will, while unit is operating, by simply turning feed selection knob. - - - feeds chemical continuously, thus avoiding "shot" feeding and unevenly distributed solution.



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Bulletin SAN-2 on request

(*Continued from page 56*)

Joint Session With the Wisconsin Engineering Society

Basil Miller, Supt. of the Fennimore Utilities, demonstrated an electromagnetic device for locating underground water works facilities. The device is simply an electromagnet actuated from a six-volt truck battery. By means of this electromagnet service boxes, valve boxes, sewer and water manhole covers and other iron facilities are magnetized so that they can be readily located if covered by earth, pavements or snow and ice. He showed that this device could be used to magnetize reinforcing in pavements so that individual rods can be located with a dip needle, even underground pipe lines poured in concrete can be magnetized so that their location can be determined.

Henry Traxler, City Mgr. of Janesville, Wis., gave a very pertinent paper on Postwar Planning, showing the necessity of all employers of labor co-operating to provide proper employment in the Postwar Period. He gave his reasons for being very apprehensive as to the situation which will exist unless some rather comprehensive plans are adopted and put into effect.

A talking movie, "Electronics at Work," prepared by the Westinghouse Electric and Mfg. Co., was presented and showed scientific developments along this line with some of their present day applications.

Paul Hansen, Cons. Engr. of Chicago, gave a very fine discussion of the necessity for co-operation between engineers and water works men in the proper design and operation of water utilities.

Wayne Bryan, Operating Engr. of the Badger Ordnance Plant at Merrimac, explained the water supply system for that plant and outlined the methods by which it was completed in a very limited time. The water supply is taken from the Wisconsin River through large open wells and a reservoir has been built in solid rock, on the bluff at a considerable elevation above the plant, to provide storage facilities.

E. L. Filby, Field Director of the Water and Sewage Works Development Committee, with headquarters at 500 Fifth Avenue, New York, recommended that plans and specifications for postwar construction of utilities be completed during the war so that the construction could proceed rapidly as soon as the war is over.

L. A. SMITH
Secretary-Treasurer

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NEWS OF THE FIELD

Facing 1944, we see certain signs that favorably affect the ability of water works to serve their customers at home as well as their sons and brothers in the nation's military forces. American labor and industry is nearing the achievement of producing the tons of supplies that every one of the 11 million soldiers needs before he can safely be put into battle action. Contracting agencies are cancelling war production contracts as well as slowing down on their future commitments. The news accounts from day to day refer to the release of workers who have been employed in war production.

The *Wall Street Journal* of November 29th says:

A general preoccupation with plans for after the war grows. It is hardly less evident in Great Britain than in the United States. Evidently both governments, notwithstanding their repeated warnings against remission of the all-out war effort, are convinced that the war has reached a stage at which inadequate industrial production is less to be feared than national unpreparedness for an early end of the fighting in Europe and that there is no longer serious risk in wideopen discussion of preparations for the post-war readjustments, whether it proceeds in official or non-official quarters. . . . Closely connected with any planning for peace is the question whether war emergency controls are to be continued, modified or ended, either when hostilities cease in Europe or not until the Pacific area has become quiet. . . . The argument for continued controls, briefly, is that the economic conditions of the war period will remain long after the military emergency has passed. This view is by no means general in this country but there is little doubt that the present Washington administration shares it or that, if then in power and not stopped by Congress, it will join Great Britain in an effort to establish several world regulatory institutions. . . .

More or less supporting the expectation that industrial transition from war to peace may prove a gradual process, the War Production Board has begun to release modest quantities of materials, including such critical items as steel, copper and aluminum, for civilian goods production and repair. It is a small beginning but it suggests a good deal. It points toward the only means of restraining a post-war scarcity-produced price inflation at all likely to be effective and it implies jobs for dismissed munitions makers." . . .

It can be said with confidence that the Office of War Utilities is fully aware of the changes that are going on in the materials picture and its staff

(*Continued on page 2*)

(*Continued from page 1*)

members are already at work on a further liberalization of order U-1. It is also evident that a more liberal policy with reference to new construction is developing and that projects, formerly deferred, are likely to be re-examined and authorized.

For the water works industry, no better Christmas gift could be asked for than the putting aside of the mentality of scarcity that dominated the WPB in 1942, when the production program was on the upgrade and the taking on of the attitude that the time has now come for maintenance and construction work, patriotically deferred, to be given the "go" signal.

To the water works executive we can say—Is this not the time to plan, for 1944, the resumption of those service maintenance programs that make for safe and continued water supply service? Are you ready to do your part in using those workers in your city who in 1944, even though the war is not over, will have been released from war production and become available for employment? One thing is very certain. The necessity for planning work to be done when the peak of the war effort is past is much more imminent than we thought it to be six months ago. Then we were apprehensive that planning for postwar would not obtain popular support; that we would be suspect of deserting the practical and primary task of winning the war for a mirage of postwar planning. Now we know that the transition from the peak of war production to a peacetime economy will be a gradual one, and that it has already begun. We must reset our sights now.

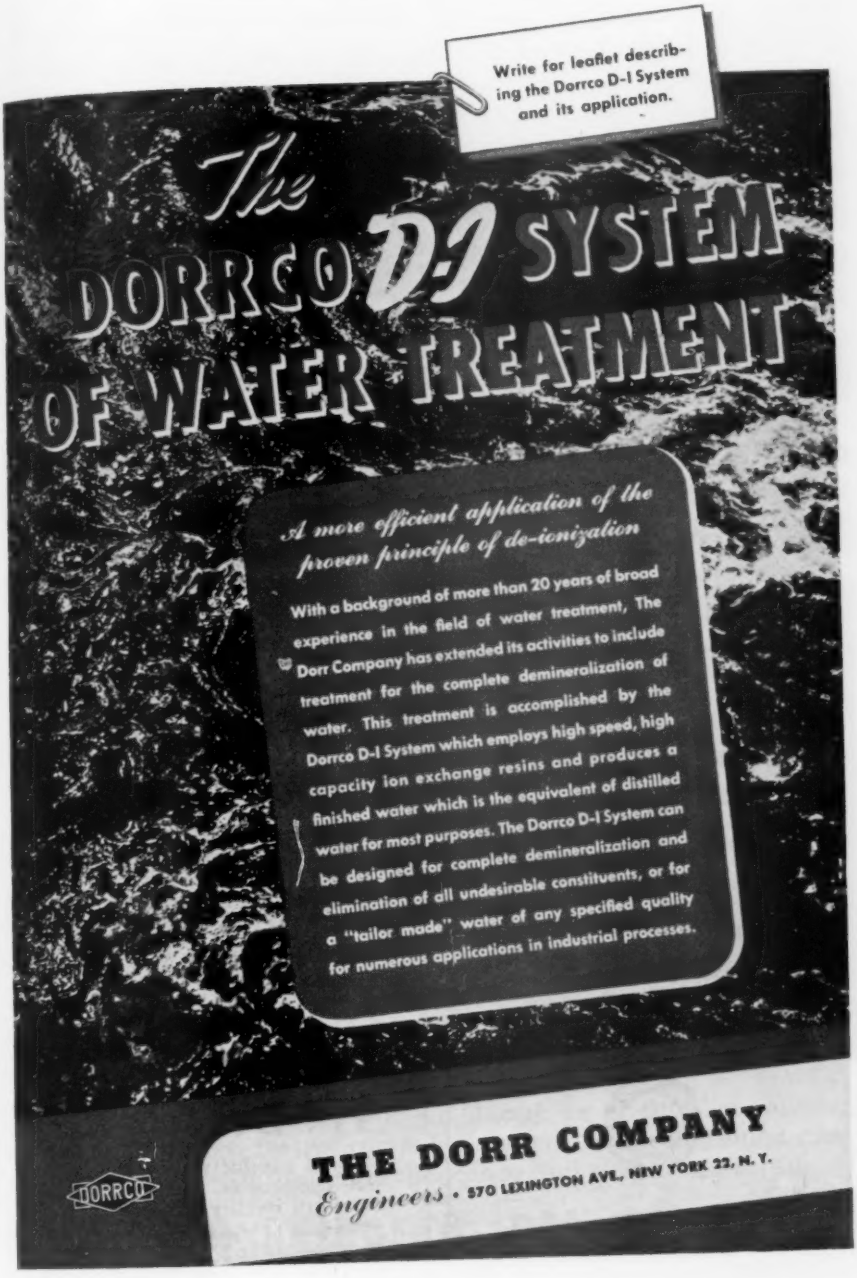
J. B. McLellan, former Asst. San. Engr., State Dept. of Health, Louisville, Ky., is now a captain in the Sanitary Corps.

Frank B. Wood, former San. Engr. in the U.S. Engr. Dept., has been commissioned Capt., Sn.C., and has gone to Carlisle Barracks, Pa. He was in the Mississippi River Com. office at Vicksburg before accepting his commission.

A. S. Hatch, Trustee of the Southwest Sect., A.W.W.A., has been made Gen. Supt. of the Water Div. of the Dept. of Public Utilities of Houston, Tex. He was advanced from the post of Distr. Engr.

Roland J. Leveque, Past-Ch. of the Virginia Sect., is now sales manager of the Omego Machine Co., manufacturers of feeders, stirring devices and slakers, at Kansas City, Mo. He was formerly associated with Phipps & Bird, Inc., Richmond, Va., and before that was Supt. of Filtration at Fredericksburg, Va.

(*Continued on page 4*)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(*Continued from page 2*)

The Hersey Inspection Bureau of Oakland, Calif., has established permanent offices and laboratories at 3405 Piedmont Avenue, Oakland 11. T. Schuyler Hersey is president of this firm of inspectors of steel, cement, machinery and building materials, and field examiners.

Charles F. Jost, Cons. Engr. and member of the firm of Buck, Seifert & Jost, New York, has been commissioned Capt., Sn.C., attached to the Army Air Force, and has been sent to Shaw Field, Sumter, S. C.

Charles J. Alfke, Exec. Vice-Pres. of the Hackensack Water Co., recently made awards to 93 employees who had been working with the company for periods ranging from 20 to 50 years. Among the recipients were: George R. Spalding, San. Engr. and N.J. Fuller Award winner in 1941, who has been with the Hackensack system for 38 years; Walter Boquist, Comptroller, who has served 34 years; and Earle Talbot, Vice-Pres., Secy. and Treas., who is a member of the 28 year group. 114 employees have served from 10 to 20 years, and 114 employees have been with the company for less than 10 years.

(*Continued on page 6*)

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(*Continued from page 4*)

REPORT OF MISSOURI VALLEY MEETING

The 28th Annual meeting of the Missouri Valley Section of the A.W.W.A., planned as a Wartime Conference, was held in Des Moines on October 15th and 16th in the Hotel Ft. Des Moines. The total registration of 124 included 69 active members, 31 associate members, 9 corporate member representatives, and 15 guests.

Dale L. Maffitt, General Manager of the Des Moines Water Works, presented a paper on "The Need for Water Conservation" which reviewed the program sponsored by WPB for the voluntary conservation of coal, petroleum products, transportation, gas, electricity, water, and communications in order to affect important savings in critical resources such as manpower, fuels, scarce materials and equipment. Savings in the use of critical resources will be reflected by a reduced consumption of water.

In a paper describing "The Use of Small Cast Iron Pipe," Shirley W. Harris of the McWane Cast Iron Pipe Company outlined the advantages of using small pipe in certain parts of a water works system, particularly where the need for fire protection is not the controlling factor in the design. It was pointed out that there are many instances where a two main system, using six inch or larger pipe on one side of a street and two inch pipe on the other side, results in economy.

Experiences in the operation of water works at army camps were described in "Army Post Water Plant Operation in the Seventh Service Command" by Captain Chester A. Obma. The 82 posts in the Seventh Service Command which have individual water supplies include 42 well supplies, 36 which purchase water from adjacent municipalities, two spring supplies, and two which obtain water from surface sources. The well supplies are of all types from shallow wells to deep wells, one of which has a depth of 4,645 feet. Some pumping problems not usually met in water works systems were due to the fact that when the construction program was at its height, it was necessary to order pumps before the wells were drilled. In some instances the final installation did not check with the anticipated conditions, and it was necessary to make motor and pump adjustments. One interesting water treatment problem was encountered in a Black Hill installation where a highly mineralized supply from a deep well has a temperature of 139°F. Here salt regenerated carbonaceous zeolite softeners are used to soften the water. The water is cooled after softening.

"Blueprint Now" was presented by E. L. Filby, Field Director of the Committee on Water and Sewerage Development. He pointed out that worth while projects in each community should be developed to the point where contracts can be let just as soon as materials and labor become available after the war.

(*Continued on page 8*)

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Your low flow test rate

ONE QUART (¼ gallon) per minute is the standard low flow test rate for ⅝" meters. An easy way to check it on your test bench is by running it into a quart bottle. If the bottle is filled in less than a minute, the rate is too high.

IT WILL PAY YOU to check this often, because it is at this flow that the sensitivity of the meter really shows up; and it has been proved that 13% of the water passed through a ⅝" meter is at about this rate of flow. If your meter does not test at least 90% at ¼ gallon per minute, you may be losing revenue that will more than pay for the cost of repairs. Many water departments have discovered this, and are now getting the benefits in dollars and cents.

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(*Continued from page 6*)

A symposium on "Postwar Planning for Water Works" consisted of descriptions of what is being done in the communities of the participants. Papers were presented by John W. Pray, Manager of Utilities, Fort Dodge, Iowa; William T. Bailey, Chief Engineer and Superintendent, Kansas City Water Department; H. F. Blomquist, Superintendent of Water Works, Cedar Rapids, Iowa; and H. V. Pederson, General Manager of Water Works, Marshalltown, Iowa. These papers brought out many sides to the problem of postwar planning such as the development of public opinion to support needed projects, preliminary investigations and design, the legal phases incident to the financing, and the element of time with regard to the availability of materials and labor. The general discussion which followed indicated that the water works men present were keenly interested in postwar planning and that many already have definite projects under way.

N. T. Veatch, Ch. of the Fuller Award Com., announced that Daniel H. Rupp of Topeka, Kansas, had been nominated for that honor.

The session on Saturday was given over to a panel discussion on "Water Department Regulations" under the direction of Melvin P. Hatcher, Director of Water Department, Kansas City, Missouri. Participating in the panel were D. L. Erickson of Lincoln, Nebraska; John C. Detweiler of Omaha, and W. Victor Weir of St. Louis, Missouri.

EARLE L. WATERMAN
Secretary-Treasurer

FLORIDA SECTION CONFERENCE

The Second Wartime Conference and Seventeenth Annual Meeting of the Florida Section, A.W.W.A., was held in Ft. Lauderdale, Thursday through Saturday, Nov. 18–20, 1943. The Governors' Club Hotel was headquarters for the Convention. A total of 105 persons were registered for the meeting and seven applications for new membership were received.

H. Lloyd Nelson, Principal Engr., Water Div., Off. of War Utilities, WPB, opened the formal program with a keynote paper on "The WPB Conservation Program and Current Priority Regulations." He emphasized the fact that the nationwide conservation program has been set up on a voluntary basis and that its success will depend upon the measure of co-operation extended both by industries and individuals. He also stressed the fact that the most serious problem confronting America today is the problem of manpower and gave a number of examples of how conservation of relatively small items will result in a material saving of manpower. He discussed the various means being used in the program for water conservation and requested that each water works operator or superintendent organize a local committee to carry on this important work in his own community.

(*Continued on page 10*)

Looking ahead with Asbestos

OFFICIAL U. S. NAVY PHOTO

When it's an ammunition depot that's needed, the Navy is apt to build it *big* and build it *fast.* This one, covering an area of 135,000 acres, used 45 miles of "Century" Pipe for water supply and fire protection.

Speed was the watchword—and the engineers naturally turned to light-weight, easily-handled K&M "Century" Asbestos-Cement Pipe. Approximately 240,000 feet of "Century" were laid as fast as the trenching machines could dig the way.

The light weight of this pipe saves hauling time—minimizes handling labor—speeds installation. Once installed, "Century" Pipe is virtually maintenance-free. It won't corrode, never tuberculates. Moreover, the flexible, leak-proof couplings simplify assembly and permit surprising adaptability . . . These are advantages well worth considering, if you are faced with a water supply problem.

For although K&M is still busy with wartime obligations, "Century" Pipe can be supplied for necessary municipal work. Research continues at K&M, turning up new possibilities for further application of asbestos products—a promise of greater usefulness and better service in the "V" years ahead.

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(*Continued from page 8*)

Carl J. Lauter, Chem. Engr., U. S. Engr. Off., Washington, followed with a most interesting and timely paper on "Problems in the Treatment of Water for the Nation's Capital." The speaker described the evolution and development of the Washington water supply system, and outlined some of the most important technical problems with which he must contend in the operation of the two plants there.

The Thursday afternoon session was opened with an address "Blueprint Now" by E. L. Filby, Field Dir., Com. on Water and Sewage Works Development, New York City. He emphasized the fact that during the 1st World War no attention was given to postwar planning. He outlined the objectives of the committee and the recommended methods by which the committee hopes to accomplish the work. He emphasized in particular the necessity for immediate preparation of plans and specifications for those public works projects which each community most needs. Recognizing in advance the importance of Mr. Filby's paper, the program committee printed the words "Blueprint Now" on each page of the printed program.

J. B. Miller, Acting Dir., Bur. of San. Eng., Florida State Board of Health, Jacksonville, in discussing Mr. Filby's paper offered the full and active co-operation of his bureau in carrying out this important work.

H. R. Hay, Chem., Philadelphia Quartz Co., Philadelphia, presented an extensive and fundamental description of "Water Purification Methods Involving Silicates of Soda." The details of the activation of sodium silicate by ammonium sulfate were presented for the first time by the speaker. Dr. A. P. Black, Prof. of Chem., U. of Florida and Cons. Chem. Engr., discussed the paper and outlined in considerable detail the various successful results now being obtained by the use of activated silica in numerous treatment plants throughout Southeastern Florida.

G. E. Ferguson, Dist. Engr., U. S. Geological Survey, Ocala, stressed the great importance of long-time records in planning water works projects and called attention to the necessity of beginning additional studies and collections of such data. He pointed out the extent and title of records available to Florida consulting engineers in planning postwar projects.

The Thursday afternoon program was concluded by a trip of inspection of the Ft. Lauderdale treatment plant where sodium silicate activated by ammonium sulfate is being used. Ft. Lauderdale is the first plant in the U. S. to use this new modification.

Prof. H. G. Turner, Research Engr., Anthracite Equipment Corp., State College, Pa., opened the Friday morning program with a fundamental discussion of filter action and a comparison of the relative efficiency and performance of sand and Anthrafilt of various effective sizes. He used numerous slides during his presentation. His paper was supplemented

(*Continued on page 12*)

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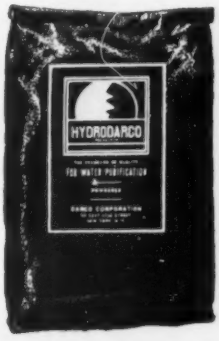

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(*Continued from page 10*)

by F. E. Stuart, Pres., Stuart-Brumley Corp., Baltimore, who discussed "Surface Wash" and the part it is playing in modern filter washing. Both speakers emphasized the possibility of materially increasing the output of water plants during the present emergency by using higher filter rates and outlined the methods by which this may be accomplished.

"Chlorination in 1943" was discussed by A. E. Griffin, Asst. Dir., Technical Service Dept., Wallace and Tiernan Co., Newark.

Thomas F. Wolfe, Research Engr., Cast Iron Pipe Research Assn., Chicago, presented a paper on "Design of Cast Iron Pipe Based on American Standards Association Methods."

Samuel B. Morris, Dean, School of Eng., Stanford U. and Pres., A.W.W.A., discussed "Waterworks in Wartime." After reviewing briefly the size and growth of the Association, he narrated a number of interesting personal experiences on water conservation while Chief Engr. of the Pasadena Water Co. He emphasized the fact that water works men should make a careful appraisal of wartime problems as they affect water supply and plan accordingly. He stressed the fact that the postwar world will be a changed world and that the development of postwar plans thereby

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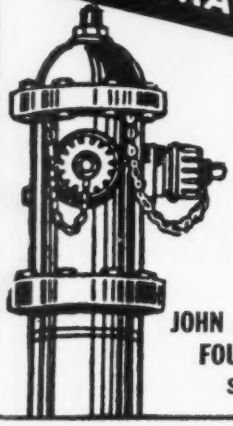
IN CASE OF FIRE

KUPFERLE FIRE HYDRANTS



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256

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Combined units for water softening, turbidity removal and split treatment applications.

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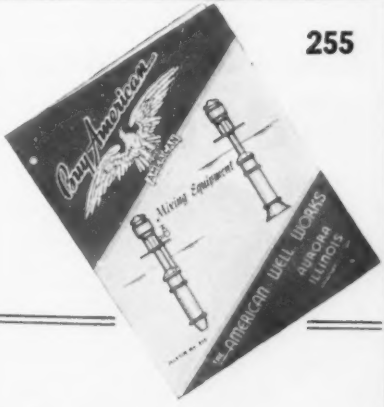

253

Sludge Removal

Conveyors for removal of sludge and the design of sedimentation tanks.

(*Continued from page 12*)

becomes a complex problem. Methods of transportation will be improved and expanded, air travel will become increasingly important and cities will expand outward. All of these factors and others should be considered in setting up postwar projects. He stressed the great opportunities to be found in Florida after the war and appealed to water works men to take the fullest advantage of them.

Wylie W. Gillespie, of Smith and Gillespie, Cons. Engr., Jacksonville, discussed "Waterworks Design Under Wartime Conditions" and Donald Walker, Chief Engr., The American Well Works, Aurora, Ill., discussed "Developments in Split Treatment for Water Softening." Both speakers used numerous large charts as part of the presentation of their material.

"The Florida Waterworks Operators Association" was discussed by J. R. Hoy, Chairman of the Florida Section, F. A. Eidsness from the State Board of Health and W. T. Calaway, its Secretary. It was brought out that the Association is experiencing exceedingly rapid growth in membership and that the "News Letter," two numbers of which have been issued, is filling a long felt need on the part of the Florida operators.

(*Continued on page 16*)

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IRONCRETE Meter Boxes consist of an oval iron top with a round lid having a Lifter Worm Lock, and a concrete body which you can cast yourself by means of a handy form. Durable, convenient, inexpensive,—made in two sizes. Write for catalog

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Also—Floor Stands, Shear Gates—Tapping Sleeves and Valves, Flap Valves and Mud Valves.

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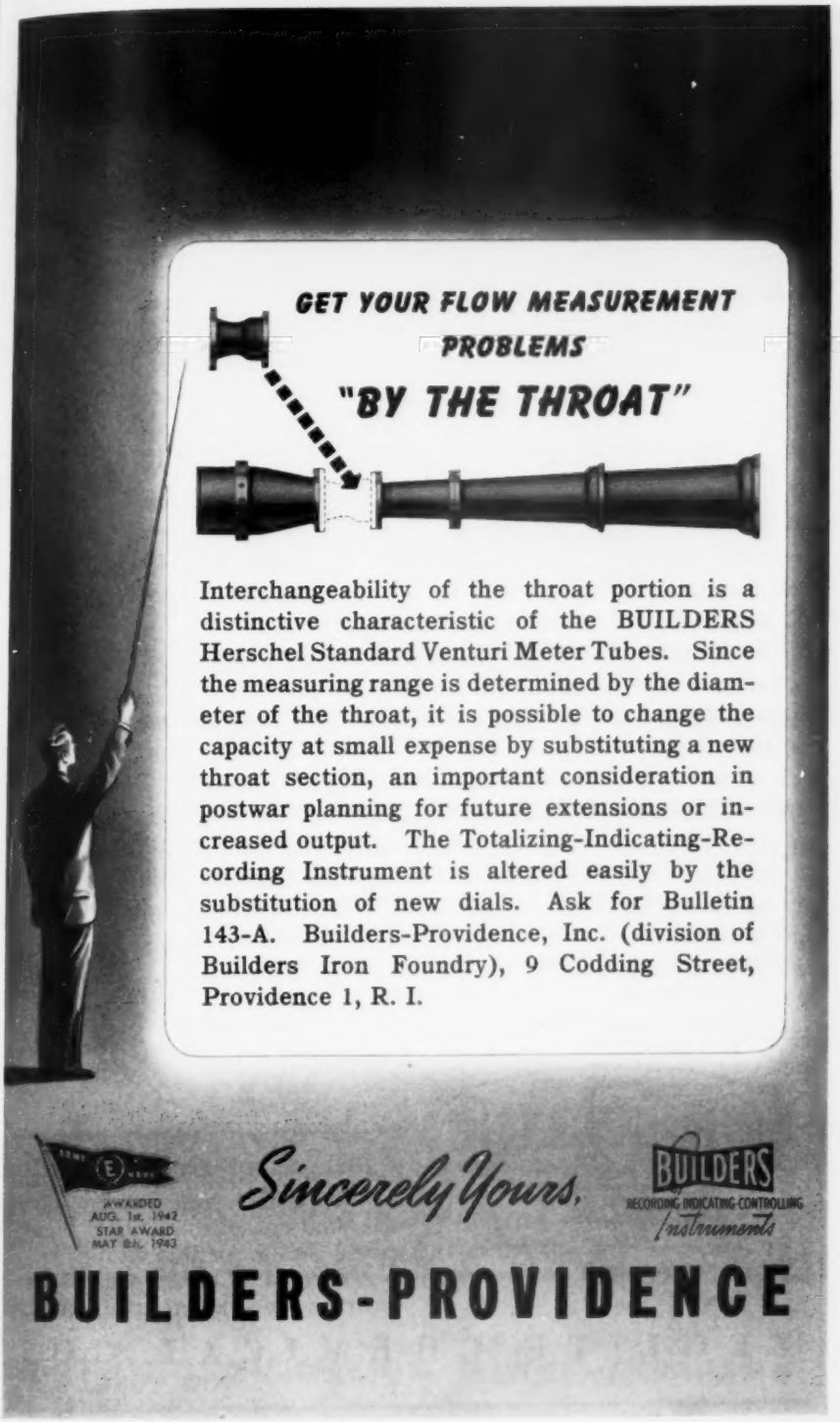
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AWARDED AUG. 1st. 1942 STAR AWARD MAY 6th. 1943
Sincerely Yours,
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RECORDING INDICATING CONTROLLING Instruments
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(*Continued from page 14*)

The George W. Fuller Award for distinguished service was awarded to F. A. Eidsness for his "outstanding service to the water plants of Florida, and especially to the Water Works Operators, through his efforts in forwarding the voluntary certification plan—and for his splendid planning and co-ordination which resulted in the very successful Short School at West Palm Beach."

The Saturday morning program was devoted to written examinations for Class B, Class C and Class D Operators Certificates. A fiield trip of inspection of the Water and Sewage Plants of the U.S. Naval Air Station located at Fr. Lauderdale was made by some members.

A. P. BLACK
Secretary-Treasurer

WEST VIRGINIA SECTION MEETING

The first joint meeting of the West Virginia Section, A.W.W.A., and the West Virginia Conference on Water Purification was held at the Stonewall Jackson Hotel, Clarksburg, W.Va., Nov. 4–5, 1943. The official registration was 130. Many small communities were represented, and a program of a practical nature was arranged.

Prof. H. W. Speiden, Head of the Dept. of Civ. Eng., West Virginia U., presided at the opening of the technical sessions which began with a paper by H. W. Martin, Mgr., East Rainelle Water System, on "Billing and Collecting for Water Service." Frank R. Shaw, Sen. San. Engr., U.S. Public Health Service, discussed in detail the new "Public Health Service Drinking Water Standards." Scotland G. Highland, Genl. Mgr. and Engr., Clarksburg Water Board, delivered a talk on "Water Conservation Plans for West Fork River Basin" in which he indicated that increased storage on the watershed of the West Fork River must be considered if floods are to be prevented and an adequate water supply assured for the communities located on the West Fork River and the Monongahela River.

(*Continued on page 18*)

GREENSAND

Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

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(*Continued from page 16*)

Charles J. Bruce, Supt., Evitts Creek Water Co., Cumberland, Md., delivered an interesting paper "A Medium-Sized City Puts on Its Thinking Cap" which pointed out what Cumberland is doing in the way of postwar planning for public works improvements.

In a paper on a subject which is now receiving a large amount of publicity, D. E. Davis, Cons. Engr., Chester Engineers, Pittsburgh, discussed the campaign for water conservation by reducing consumption through the elimination of waste.

Maj. Frank Woodbury Jones, Sanitarian (R), U.S. Public Health Service, delivered a talk on "Water Production—An Essential War Industry." In his talk, Maj. Jones pointed out the danger of lowering plant operation standards and some of the causes of lowered standards and the manner in which they might be avoided.

Following the technical session of the first day, an inspection trip to the Clarksburg Water Purification Plant was made.

Joseph Kerr Buchanan was awarded the George W. Fuller Memorial Award with the following citation: "In recognition of his continued in-

(*Continued on page 20*)

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Rusta Restor cathodic protection, provides *permanent protection* against rusting of water tanks, piping and steel structures of all kinds.

Initial cost of a complete equipment is about equal to the cost of a good paint job. . . . Operation costs only about 2 mills (i. e. $0.002) per year per square foot of surface protected.

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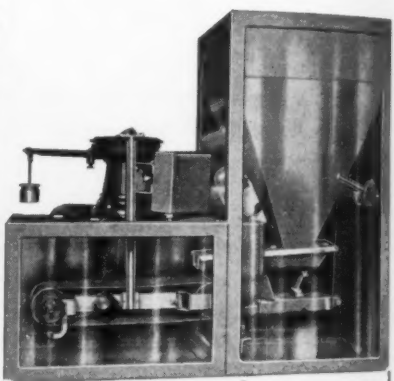

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Write for Catalog 1, "Water Works Specialties". Grinnell Co., Inc., Executive Offices, Providence, R. I. Branch warehouses in principal cities.

Sleeve (Solid)
Fig. 521

Plug
Fig. 523

Flanged Socket
Fig. 528

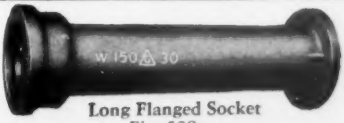
Cap
Fig. 524

Split Sleeve
Fig. 522

Tee
Fig. 511

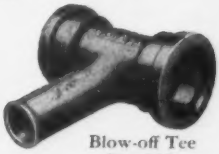
Warren Coupling
Fig. 533

Reducer
Fig. 526


Long Flanged Socket
Fig. 529

Long ¼ Bend
Fig. 505

Reducer
Fig. 525


Blow-off Tee
Fig. 515

¼ Bend
Fig. 501

Tee
Fig. 514

Cross
Fig. 516

⅛ Bend
Fig. 507

GRINNELL

WHENEVER **PIPING** IS INVOLVED

(*Continued from page 18*)

terest in the West Virginia Section meetings from their inception, his outstanding ability as an executive, his leadership in water works utilities, the inspiration to all of these meetings with his geniality, the Committee of the George W. Fuller Memorial Award unanimously selects Mr. Joseph K. Buchanan, Vice-President, Monongahela West Penn Public Service Company, as recipient of the award for 1943."

Chairman-Elect John C. Edwards, Asst. Supt. of the Huntington Water Corp., presided over the technical session on November 5, which opened with the showing of the film "The Ominous Arms Case." Following this, J. B. Douglass, Engr., West Virginia Water Service Co., Charleston, W.Va., presented a paper on "Mapping the Water Distribution System." Mr. Douglass emphasized the importance of keeping an accurate record of the distribution system and gave some suggestions for compiling the data.

Martin E. Flentje, Purification Dept., American Water Works and Electric Co., New York, described "Twenty Years of Trouble Shooting," and thus covered the period that he has been actively engaged by water service companies in this country.

Perkins Boynton, Chem., Clarksburg Water Board, assisted by Henry R. Gay Jr., presented a practical demonstration on the "Coagulation of Water" using a stirring device and samples of water of different qualities.

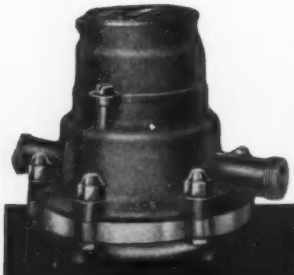
Another practical demonstration was given by Gilbert L. Kelson, Principal Sanitarian, State Dept. of Health, in which he used several commercial chlorine testing kits, as well as the starch-iodide test. Mr. Kelso was able to show the effect of certain substances which interfered with the orthotolidine test.

The meeting closed with a very interesting demonstration of chlorinator repair and maintenance by Mr. E. P. Johnson, Dist. Engr., Wallace & Tiernan Co., Pittsburgh.

J. B. HARRINGTON
Secretary-Treasurer

(*Continued on page 23*)

NIAGARA IRON CASE WATER METERS



provide wartime copper conservation plus the time-proved Niagara design. They comply with victory-meter limitations. Works are interchangeable with American Bronze Case Meters.

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(*Continued from page 20*)

William F. Uhl, 1st Lt., Sn.C., formerly with the Indiana State Bd. of Health, is in England engaged in work on water supply and sewage disposal at military installations.

Edwin F. Franz, former Asst. San. Engr., State Dept. of Health, Louisville, Ky., is now a lieutenant in the U. S. Engineers Corps.

(*Continued on page 44*)

Alexander Lindsay, Superintendent of Water in Spokane, Wash., died on November 16th. Mr. Lindsay had been a member of the A.W.W.A. since 1912, and, at the time of his death, was Director for the Pacific Northwest Section, of which he had been a charter member and which he had served as Chairman in 1931. In 1939, the Section cited him for the Fuller Award "because of his meritorious contribution to the science of underground water supply development for the City of Spokane." He was Chairman of the Committee on Underground Water Supply in 1940–41.

Lindsay was born in St. Thomas, Ont., Can., Dec. 28, 1880, and graduated from the high school there in 1900. He received a degree in Mechanical Engineering from Purdue University in 1904, and the next year became Assistant City Engineer in Spokane. During 1906–07, he calibrated and reported on hydroelectric development on the Salmon River in Idaho. He resumed his activities as Assistant City Engineer in Spokane in 1908 and in 1910 was made Superintendent of Water. During his tenure, he supervised the design and construction of numerous hydraulic structures including pipe lines, reservoirs, pumping plants and, in 1935, the municipal, automatic, hydroelectric power plant on the Spokane River.

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(*Continued from page 23*)

VIRGINIA SECTION MEETING

The Virginia Section 10th Annual Conference was held at the Hotel Roanoke, Roanoke, Va., Monday and Tuesday, November 22 and 23. There were 166 registrants, of which 43 were members. Applications at this meeting brought the membership, for the first time, to more than 100.

Samuel B. Morris, Pres. of the A.W.W.A., reviewed the activities of the organization and its growth during the past year.

Charles E. Moore, W. T. Wells, and Reeves Newsom described necessary expansions and plans now in the making for the water supplies at, respectively, Roanoke, Radford, and Newport News.

Dr. I. C. Riggin gave an address stressing the place and importance of public water supplies to the health and well being of citizens of any community and Stuart T. Saunders, Asst. Genl. Solicitor, N. & W. Railway Co., reiterated the need for independent thought during the present emergency and for creative effort and steadfast guidance by American traditions in the world which is to follow.

The current material situation with respect to cast-iron pipe, meters, pumping equipment, and chlorine and chlorination equipment was compre-

(*Continued on page 46*)

NO MORE RUST

Will Form Inside Your Steel Tanks If You Use

"RUSTOP"

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NO CAULKING MATERIALS

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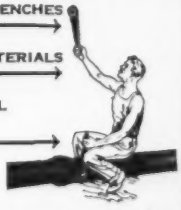

For water supply, fire protection systems, sewage disposal systems, industrial, and irrigation. Flexible.

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ACTIVATED ALUM	SODIUM ALUMINATE
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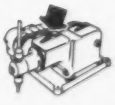
With capacity up to 6½ g.p.h. against a maximum pressure of 200 lbs. per sq. in. this plunger type pump can be cross connected to starting switch of water pump for automatic chemical feeding. This set-up requires no attention other than periodic refilling of reagent container.

SEE-THRU REAGENT HEAD

Special plastic head and check valves combined with non corrodible stainless steel plunger make this %Proportioneers% pump ideal for water purification with chemicals listed above.



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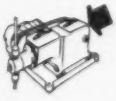
Plunger and Packing are protected by special %Proportioneers% yoke preventing "build-up" on plunger and subsequent packing failure and air leakage.



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(*Continued from page 44*)

hensively reviewed during a two hour session by representatives of manufacturers of these types of equipment.

Garland Sydnor explained the development, management and operation of small water works for unincorporated communities and indicated the important place which small, usually independent water supplies have in the water works field.

Judge H. Lester Hooker, Ch., State Corporation Comm., spoke on "Jurisdiction of the State Corporation Commission." Judge Hooker explained the methods and procedure of the State Corporation Comm. to assure a fair return on corporate investments and an equitable rate structure for both the corporation and the individuals served. This paper was particularly informative with respect to privately owned public water supplies but involved principles readily applicable to municipalities.

X. D. Murden, Supt., Water Dept., Portsmouth, Va., described the difficulties encountered at the new water filtration plant and system extensions at Portsmouth and the steps taken to remedy these difficulties.

"Postwar Planning" was the theme of the papers presented by E. L. Filby, Field Dir., Comm. on Water Works and Sewerage Development,

(*Continued on page 47*)

You get all this

QUICK SEALING of initial leakage permitting
IMMEDIATE BACK FILLING . . . and
PROMPT CLEARING UP OF TRAFFIC HAZARDS

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IMMUNITY FROM COMPOSITION CHANGES due to shaking down in transit . . .
NO TROUBLE IF COMPOUND GETS WET by rain, snow or flood.

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(*Continued from page 46*)

Gen. James A. Anderson, State Highway Comr. and Ch. of the Comm. of Public Works of the Virginia State Planning Bd. and Kenneth Markwell, Regional Dir., FWA. All agreed that it was most essential for postwar development to be planned fully now, such plans, wherever practicable, to be carried through the blue print stage. Mr. Markwell also reviewed the work which had been done by the Federal Works Agency to assure communities effected by the war effort adequate supplies of water to carry them through their emergency.

L. H. Enslow, Editor of Water Works and Sewerage, reviewed current water works developments and literature, stressing, however, the fact that although many interesting developments had occurred during the past year, he did not find anything in these developments which would cause obsolescence of postwar plans which are now completed. A discussion period was led by R. C. Bardwell.

The Fuller Award was this year presented to R. C. Bardwell "in recognition of his exceptional activity and leadership in the affairs of the Virginia Section; also his valuable contribution to the water works field particularly in connection with railway water supplies."

(*Continued on page 48*)

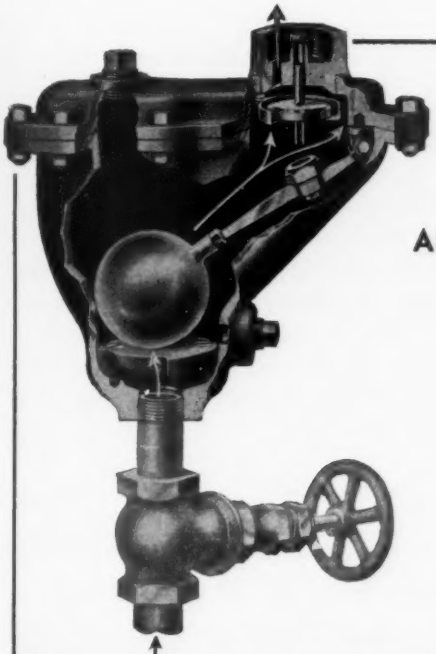

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FIG. 372

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AIR RELEASE VALVES

SIMPLE

in construction

DEPENDABLE

in operation

WRITE FOR BULLETIN Q

RENSSELAER VALVE CO., TROY, N. Y.

(*Continued from page 47*)

A few words of recognition for the success of the Conference are due to the Virginia Municipal Review, official publication of the League of Virginia Municipalities, which during the past year has carried each month an article of general interest to members of the water works progression under the heading *News, Views and Comments.* Through this brief and non-technical article, the Virginia Section was able to reach many local officials who had previously had very little knowledge of the work of the Virginia Section or the A.W.W.A.

FRANK H. MILLER
Secretary-Treasurer

E. G. Koyl, Field Engr., with Infilco Inc., is now posted in Cleveland. Due to the "manpower shortage" he was transferred there from Indianapolis.

"De Laval Pumping Units at Philadelphia" is a new bulletin which has been issued by the De Laval Steam Turbine Co., Trenton 2, N.J. It is an historical brochure, covering the development of the Philadelphia works from the first engine-driven pumping unit, installed in 1801. A 2½ mgd., 213-ft.-head turbine-driven pump was put into use in the Torresdale Station of that city in 1907, the first centrifugal pump to be installed by an American municipality for water works service. Philadelphia now has leased to Detroit four 40-mgd. pumps, because WPB deemed them more necessary to Detroit's demands than to Philadelphia's.

The bulletin also includes a report on tests to show the effect of wear on pump efficiency. Tests made six years after installation show no measurable loss in efficiency. The bulletin is illustrated by photographs and flow diagrams.

Emphasis on industral marketing and advertising in the engineering schools is being proposed by the magazine Industrial Marketing, in view of the fact that many of the graduates of these schools will find their vocations in sales, distribution, research, advertising or some other department of industrial marketing.

Industrial Marketing has offered an annual award for the best article on the subject appearing in any of the student magazines. The first award will be made in the fall of 1944, and will be based on material appearing in the current school year.

(*Continued on page 50*)

PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

Trade Mark MABB'S Reg. U. S. Pat. Off.

MABBS RAWHIDE PACKING

An Ideal Packing for Water Works and Sewage Pumps and Valves

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SOFT, CLEAR WATER IN 8 MINUTES BY NEW SPACE-SAVING METHOD

FIELD REPORT

THE PERMUTIT COMPANY, NEW YORK, N. Y.

Equipment: "SPIRACTOR" COLD LIME WATER SOFTENER
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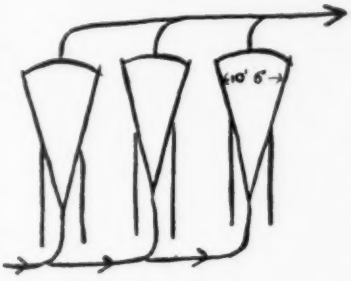

Note small area for daily capacity of 3,000,000 gallons!

This plant has more than met specifications. Detention time is only 8 minutes. There is no sludge. Softened effluent is so clear that filters have little to do. Engineer much pleased at fine results and simplicity. Simply turned on the water and the chemicals—no time wasted in getting started.

WATER ANALYSIS	RAW WATER	SPIRACTOR EFFLUENT#
Total Hardness	180	40
Calcium Hardness	172	32
Alkalinity A (Methyl Orange)	180	40
Alkalinity B (Phenolphthalein)	0	20
Free Carbon Dioxide	20	0

#Before filter

Write for free bulletin to The Permutit Co., Dept. G2, 330 West 42nd St., New York, N. Y. In Canada: Permutit Company of Canada, Ltd. . . . Montreal.

PERMUTIT WATER CONDITIONING HEADQUARTERS

(*Continued from page 48*)

H. Lloyd Nelson, who served as a full-time consultant to the Water Div. of the Office of War Utilities, WPB, from November 1941 to February 1942, and since that time on a part-time basis, terminated this work effective Dec. 2, 1943, and is now devoting his entire time to his duties as Eastern Sales Mgr. of the U.S. Pipe and Fdry. Co., Philadelphia.

William Sleeper is now with the Operating and Maintenance Dept. of the Jamaica (L.I.) Sewage Treatment Works, where he is in charge of mechanical and electrical equipment. He went there from designing and construction work on the Westhampton (L.I.) Airport.

Everett S. Lee, Engr., General Eng. Laboratory, General Electric Co., Schenectady, N. Y., was elected Chairman of Engineers' Council for Professional Development at its 11th Annual Meeting held recently in New York City. Also elected to serve with him are James W. Parker, Vice-Pres. and Chief Engr., Detroit Edison Co., Vice-Ch.; Stephen L. Tyler, Executive Secy., A.I.C.E., Secy.; and R. L. Sackett, Dean Emeritus of Eng., Pa. State College, Asst. Secy.

Engineers' Council for Professional Development is a conference organized to enhance the professional status of engineers through the cooperative efforts of the following national organizations concerned with professional, technical, educational, and legislative aspects of engineers' lives: Am. Soc. of Civ. Engr., Am. Ins. of Mining and Metallurgical Engr., Am. Soc. of Mech. Engr., Am. Inst. of Electrical Engr., The Eng. Inst. of Canada, Am. Inst. of Chem. Engr., Society for the Promotion of Engineering Education, National Council of State Bd. of Eng. Examiners. Objectives of the Council are to co-ordinate and promote efforts to attain higher professional standards of education and practice, greater solidarity of the engineering profession, and greater effectiveness in dealing with technical, economic, and social problems.

Headquarters are maintained in the Eng. Soc. Bldg., 29 West 39th Street, New York 18, N. Y.

(*Continued on page 52*)

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When poured into a joint, HYDRO-TITE immediately solidifies upon contact with the metal and bonds to both the surfaces of the bell and the spigot for the entire depth of the joint. It requires no caulking and after pouring a joint, water pressure may be immediately applied.

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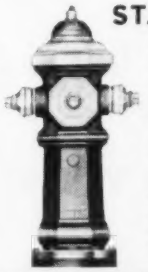

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(*Continued from page 50*)

"The development of a method which will enable a weakened or wounded man, adrift on a rubber raft, to desalt sea water easily and without assistance has challenged scientists for years," observed Waldemar Kaempffert in a recent Sunday *New York Times,* adding "The water must not only be virtually saltless but free from chemicals that will do harm. Another problem," he continued, "is that of saving space. Stowage of bulky equipment in a small rubber raft is obviously impracticable."

He went on to describe thus the solution of the problem achieved by Howard L. Tiger of the Permutit Company, and his staff, which included Paul C. Goetz, Sidney Sussman, Calvin Calmon, Erick Pick, W. Howard Reed, and Vincent J. Calise:

> Step by step the chemicals in briquet form were developed and improved in performance, and finally were compressed under extremely high pressures so as to occupy a minimum space and to be easy to carry and handle on the high seas. A special ingredient was incorporated to make the briquets disintegrate in about a minute, thereby relieving the weakened survivor of much effort. For protection against sea water immersion or spray, each briquet was doubly wrapped in heat-sealed waterproof wrappers.

(*Continued on page 54*)

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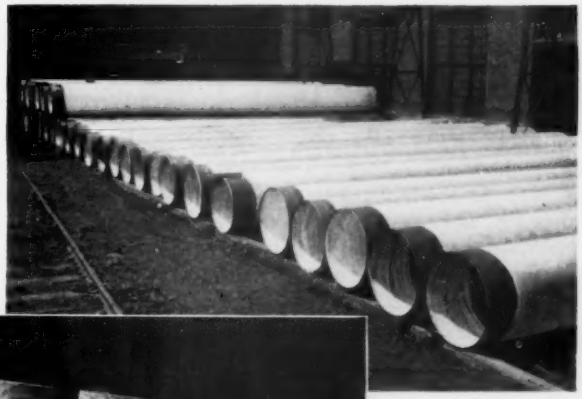

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COOK Deep-Well Turbine Pumps

(*Continued from page 52*)

The final result, like many good inventions, is simplicity itself—a tough, collapsible, noncorrodible, plastic desalting bag, with a simple strap closure and a built-in filter that can be used over and over again to prepare as many batches of desalted water as there are briquets in the kit.

The Naval Medical Research Institute at Bethesda, Md., had independently developed a method which required the use of two chemicals and four plastic bags. It also experimented with small stills.

The Navy Medical Research Institute and the Permutit methods were subjected to a grueling test in the Gulf of Mexico last summer. Eighteen volunteers ranging in age from 19 to 45 spent sixty-one hours on rubber rafts and twenty-five hours on an escort vessel from ten to twenty miles offshore with no food except some butterscotch and nothing to drink but sea water desalted by one method or another. The Permutit method won. The Army and Navy (as well as the American Airlines for their air transport command work) adopted it, and mass production is under way.

What the chemicals in the Permutit process may be is a military secret. Here we can say no more than that the basic principle involves the use of chemicals that react with the soluble salts present in sea water to produce an insoluble substance that can be filtered out. Each briquet is good for more than a pint of water. A complete kit consists of the plastic desalting bag and from six to fourteen briquets. The desalting bag is suspended from the neck with a looped cord so that it will not be lost.

The desalting bag is used to scoop up some sea water to a marked line. Next the briquet is dropped in to disintegrate into small particles rapidly. After the bag has been folded at the top and fastened to prevent leakage, it is shaken and kneaded. After about twenty minutes the water is fit to drink. A thirsty man simply sucks it out through a plastic nozzle at the bottom of the bag. The built-in filter removes the suspended chemicals and clarifies the water, which surpasses medical standards. Some salt is intentionally retained for physiological reasons. The invention is one of the most important that has come out of the war—a boon for shipwrecked fliers.

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WPB Orders and Rulings

Manpower and Selective Service

Published Monthly
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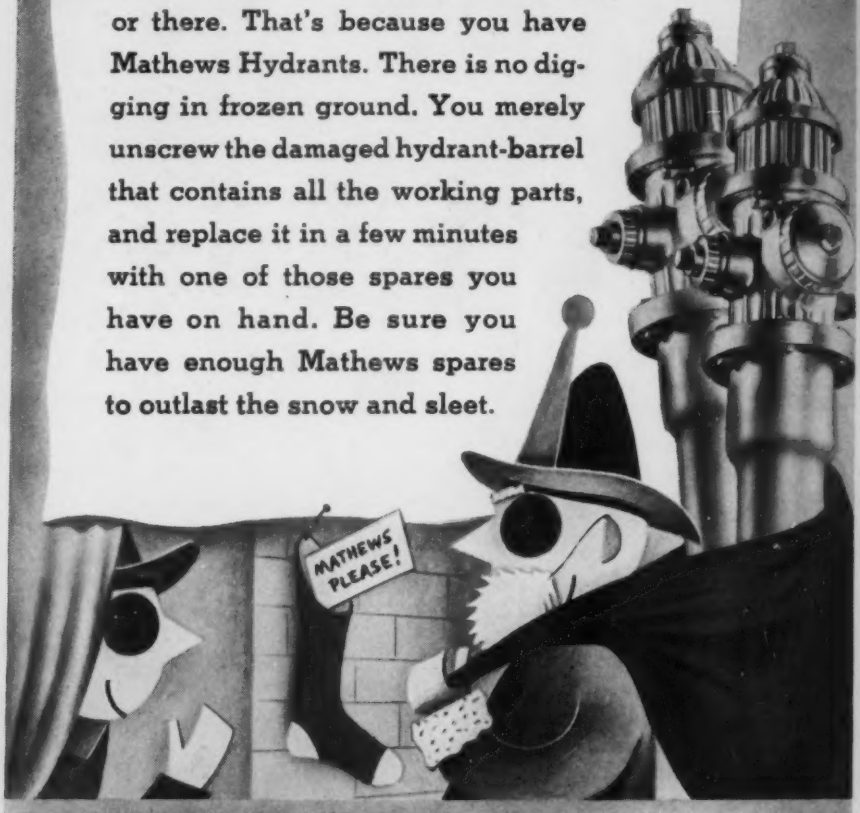

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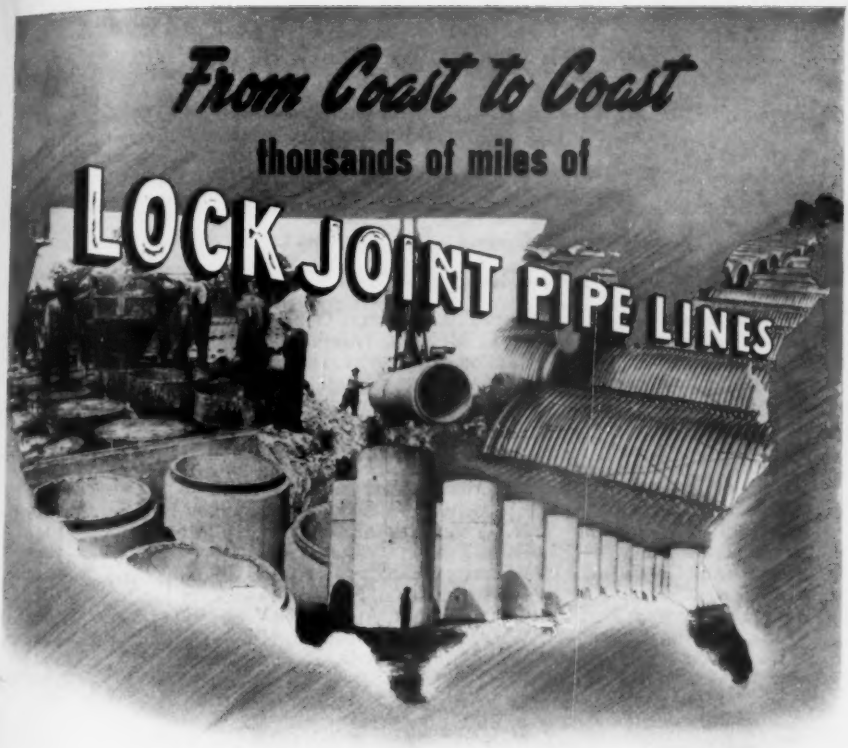

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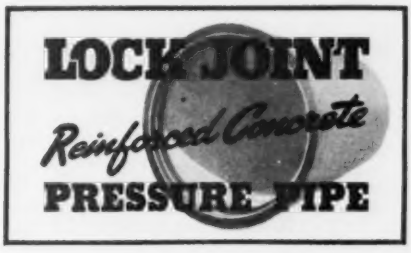

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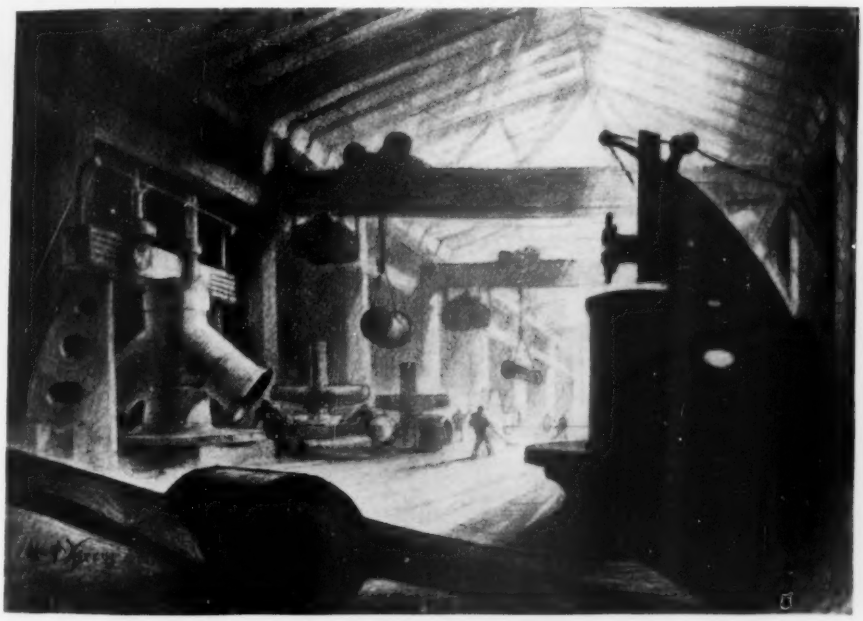

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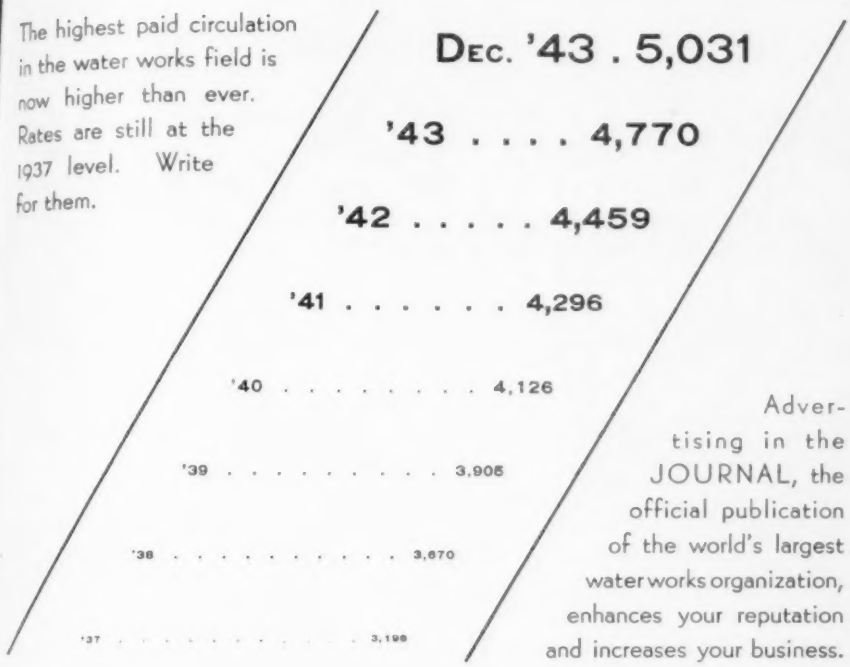

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COMING MEETINGS

January 18, 12:30 p.m.—New York Section at Hotel Commodore, New York, N.Y. Mid-Winter Luncheon Meeting and War Conference. Speakers—Willard Chevalier and Abel Wolman. All A.W.W.A. members present in New York for the A.S.C.E. meeting please take notice and attend.

March 16–17—Minnesota Section at Lowry Hotel, St. Paul, Minn. Secretary, R. M. Finch, Wallace & Tiernan Co., 416 Flour Exchange, Minneapolis, Minn.

April 11–13—Illinois Section at Peoria, Ill. Secretary, H. E. Hudson, Jr., 912 W. Charles St., Champaign, Ill.

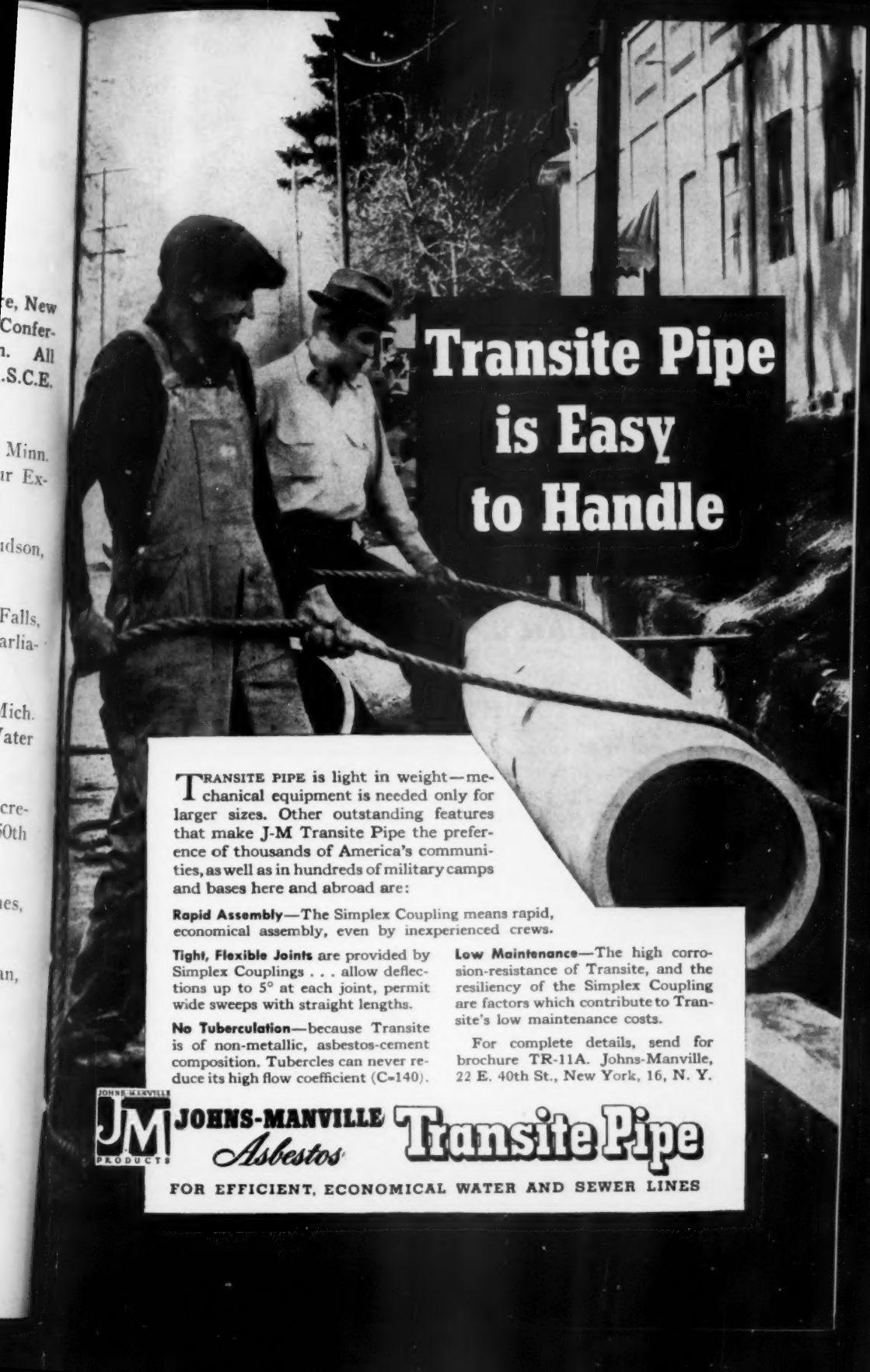
April 19–21—Canadian Section at General Brock Hotel, Niagara Falls, Ont. Secretary, A. E. Berry, Ontario Dept. of Health, Parliament Bldgs., Toronto, Ont., Canada.

April 26–28—Michigan Section at Otsego Hotel, Jackson, Mich. Secretary, M. N. Gerardy, Detroit Dept. of Water Supply, Water Board Bldg., Detroit, Mich.

April 27–28—New York Section at Hotel Utica, Utica, N.Y. Secretary, R. K. Blanchard, Vice-Pres., Neptune Meter Co., 50 W. 50th St., New York 20, N.Y.

May 12–13—Pacific Northwest Section. Secretary, Wm. P. Hughes, City Engr. and Water Supt., City Hall, Lewiston, Idaho.

October 16–18—Southwest Section. Secretary, George J. Rohan, Supt., Water Works, Waco, Texas.



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PUBLICATIONS

Books

MANUAL OF WATER QUALITY AND TREATMENT.—A 300-page *Manual* of information brought up to date from material originally published in 1925 as a part of the *Manual of Water Works Practice.* The rewriting was directed by Paul Hansen and the late Lewis V. Carpenter. Eleven chapters cover: Characteristics of Available Sources; Organisms in Water; Standards of Quality; Purification Occurring in Streams, Lakes and Reservoirs; Partial Treatment and Treatment Preliminary to Filtration; Coagulants and Coagulation; Chlorine and Other Chemicals; Tastes and Odors; Filtration; Chemical Conditioning of Waters; and Treatment Plant Control. The book is complete with over 50 illustrations, graphs and charts and has a complete index and bibliography. Published in 1940; reprinted in 1941. Price to A. W. W. A. Members, $2.50; to A. W. W. A. Members who send cash with order, $2.25; to non-members, $3.00.

INDEX TO THE PROCEEDINGS, JOURNAL AND OTHER PUBLICATIONS.—This Index covers 59 years of A. W. W. A. publications: the Proceedings for 1881 through 1913; the JOURNAL for 1914 through 1939; and other Association publications. In the 285 pp. of the book are given: a chronological listing of all published papers (grouped under 70 major subjects of the water works field); a complete author index; and a list of other publications of the A. W. W. A. or published in co-operation with other organizations. Price to A. W. W. A. Members, $1.75; to A. W. W. A. Members who send cash with order, $1.50; to non-members, $2.00.

MANUAL OF WATER WORKS ACCOUNTING.—Prepared jointly by the A. W. W. A. and the Municipal Finance Officers Association, this 500-page Manual contains twenty chapters covering: Accounting Organization and Control; Accounts; Books of General Entry and Accounting Documents; Customer Accounting Procedure up to Time of Billing; Customer Billing and Bookkeeping; Purchases; Accounting for Materials and Supplies; Payroll Accounting; Accounting for Contractual Services, Interest on Notes, and Taxes; Depreciation; Distribution of Clearing Accounts; Cost Accounting; Accounting for Cash; Restricted Funds; Investments; Plant Accounting; Creditor and Ownership Equities; Preparation of Financial Statements; and Financial Policies and Planning. Published in 1938. Price, for general sales, $4.00; to A. W. W. A. Members who send cash with order, $3.20.

STANDARD METHODS FOR THE EXAMINATION OF WATER AND SEWAGE.—Published jointly by the A. W. W. A. and the American Public Health Association with collaboration of the American Chemical Society. Eighth Edition, 1936. Cloth bound, 300 pages. Available through the American Public Health Association, 1790 Broadway, New York 19, N. Y., at $2.50 per copy.

WATER-BORNE OUTBREAKS IN THE UNITED STATES AND CANADA AND THEIR SIGNIFICANCE.—By Arthur E. Gorman and Abel Wolman. Published in the February 1939 JOURNAL, p. 225. This 150-page book is a unique compilation and a valuable interpretation. Published separately from the JOURNAL at $1.00 per copy.

Specifications for Cast-Iron Pipe, Fittings, Lining and Laying

AMERICAN RECOMMENDED PRACTICE MANUAL FOR THE COMPUTATION OF STRENGTH AND THICKNESS OF CAST-IRON PIPE—A.S.A. A21.1–1939.—Adopted by the A. W. W. A. December 1939 and published as a part of the December 1939 JOURNAL. 81 pp. Reprints, 40¢ per copy.

AMERICAN STANDARD SPECIFICATIONS FOR CAST-IRON PIT CAST PIPE FOR WATER OR OTHER LIQUIDS—A.S.A. A21.2–1939.—Adopted by the A. W. W. A. December 1939 and published as a part of the December 1939 JOURNAL. 23 pp. Reprints, 20¢ per copy.

AMERICAN STANDARD SPECIFICATIONS FOR CEMENT MORTAR LINING FOR CAST-IRON PIPE AND FITTINGS—A.S.A. A21.4–1939.—Adopted by the A. W. W. A. December 1939 and published as a part of the December 1939 JOURNAL. 9 pp. Reprints, 15¢ per copy.

STANDARD SPECIFICATIONS FOR CAST-IRON SPECIAL CASTINGS.—The portion of the A. W. W. A. 1908 Specifications for Cast-Iron Water Pipe and Special Castings which relates to special castings has not yet been superseded by new material produced by the American Standards Association Committee A21. Until such time as this Committee completes its report A21.7, the A. W. W. A. 1908 Specifications continue to be a basis for purchase *insofar as they relate to special castings only.* 36 pp. Reprints, 30¢ per copy.

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TENTATIVE SPECIFICATIONS FOR LOCK-BAR PIPE—7A.2–T.—Published as Tentative Specifications as a part of the January 1940 JOURNAL and approved only as Tentative Specifications by the A. W. W. A. April 25, 1940. 12 pp. Reprints 15¢ per copy.

STANDARD SPECIFICATIONS FOR ELECTRIC FUSION WELDED STEEL WATER PIPE OF SIZES 30 INCHES AND OVER—7A.3–1940.—Published as Tentative Specifications as a part of the January 1940 JOURNAL and adopted as Standard by the A. W. W. A. April 25, 1940. Emergency Alternate Provisions promulgated as of July 24, 1943, and published as part of the September 1943 JOURNAL. 30 pp. Reprints, 15¢ per copy.

TENTATIVE REVISION (1943) OF STANDARD SPECIFICATIONS FOR STEEL WATER PIPE OF SIZES UP TO BUT NOT INCLUDING 30 INCHES—7A.4–TR–1943.—Published as Tentative Specifications as a part of the June 1940 JOURNAL and adopted as Standard by the A. W. W. A. June 26, 1941. Tentative Revision published in the April 1943 JOURNAL. Emergency Alternate Provisions promulgated as of June 19, 1943, and published as part of the September and October 1943 JOURNALS. 28 pp. Reprints, 15¢ per copy.

STANDARD SPECIFICATIONS FOR COAL-TAR ENAMEL PROTECTIVE COATINGS FOR STEEL WATER PIPE OF SIZES 30 INCHES AND OVER—7A.5–1940.—Published as Tentative Specifications as a part of the January 1940 JOURNAL and adopted as Standard by the A. W. W. A. April 25, 1940. 38 pp. Reprinted under same cover as 7A.6–1940, description of which follows.

STANDARD SPECIFICATIONS FOR COAL-TAR ENAMEL PROTECTIVE COATINGS FOR STEEL WATER PIPE OF SIZES UP TO BUT NOT INCLUDING 30 INCHES—7A.6–1940.—Published as Tentative Specifications as a part of the January 1940 JOURNAL and adopted as Standard by the A. W. W. A. April 25, 1940. 32 pp. Reprinted under one cover with 7A.5–1940, 30¢ per copy.

STANDARD SPECIFICATIONS FOR CEMENT-MORTAR PROTECTIVE COATING FOR STEEL WATER PIPE OF SIZES 30 INCHES AND OVER—7A.7–1941.—Published as Tentative Specifications as a part of the January 1940 JOURNAL and adopted as Standard by the A. W. W. A. June 26, 1941. 22 pp. Reprints, 20¢ per copy.

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TENTATIVE SPECIFICATIONS FOR SLUICE GATES—7F.2–T.—Approved as Tentative Specifications by the A. W. W. A. June 26, 1941 and published as a part of the October 1941 JOURNAL. 11 pp. Reprints, 15¢ per copy.

STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE—7F.3–1940.—Adopted as Standard Specifications by the A. W. W. A. January 17, 1940 and published as a part of the August 1940 JOURNAL. 12 pp. Reprints, 15¢ per copy.

UNIFORM MARKING OF FIRE HYDRANTS: STANDARD COLORS FOR PAINTING TO INDICATE FLOW CAPACITY—7F.3.1–1937.—Published in the April 1937 JOURNAL and adopted by the A. W. W. A. June 7, 1937. Included in 7F.3–1940 described above.

Other Specifications

TENTATIVE EMERGENCY SPECIFICATIONS FOR REINFORCED CONCRETE PRESSURE PIPE—7B–T.—Approved as Tentative Specifications by the A. W. W. A. March 1943 and published as part of the April 1943 JOURNAL. 11 pp. Reprints, 15¢ per copy.

STANDARD SPECIFICATIONS FOR ELEVATED STEEL WATER TANKS, STANDPIPES AND RESERVOIRS—7H.1–1943.—Published as Tentative Specifications as a part of the December 1940 JOURNAL and adopted as Standard by the A. W. W. A. June 26, 1941, by the American Welding Society July 23, 1941 and by the New England Water Works Assn. September 28, 1943. Revised as of October 1, 1942. 35 pp. Reprints, 25¢ per copy.

TENTATIVE RECOMMENDED PRACTICE—REPAINTING ELEVATED STEEL TANKS AND WATER STORAGE TANKS (WITH NOTES ON REPAIRS)—7H.2–T.—Approved by the A. W. W. A. June 15, 1943 and published as part of the July 1943 JOURNAL. 7 pp. Reprints, 5¢ per copy.

TENTATIVE SPECIFICATIONS FOR COLD WATER METERS—DISPLACEMENT TYPE—7M.1–T.—Approved as Tentative Specifications by the A. W. W. A. November 1941 and published as Tentative Specifications in the December 1941 JOURNAL. (With Emergency Alternate Provisions issued as of December 1, 1942.) 14 pp. Reprints, 20¢ per copy.

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RECOMMENDED PRACTICE FOR DISTRIBUTION SYSTEM RECORDS—7G.1–1940.—Published in the February 1940 JOURNAL. 40 pp. Reprints, 25¢ per copy.

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Section 7. An Affiliate shall be any person otherwise qualified for Active membership who, at the time of application, is not nor previously has been a member of the Association and who, for acceptable reasons, does not wish to become an Active Member.

No corporation, firm or partnership which otherwise would be entitled to the grades of Associate or Corporate member may hold the grade of Affiliate. No employee of an Associate member may become an Affiliate. No person who is the superintendent, the manager, the chief engineer, the superintendent of filtration, the chief chemist, or the superintendent of distribution in a plant having more than 3,000 active services, is eligible for the grade of Affiliate. Under unusual conditions, exception to the above may be made by action of the Executive Committee if the applicant sets forth fully the reasons for the exception when applying for the Affiliate grade.

Affiliates shall not be entitled to vote upon general Association questions, and not eligible to hold office in the Association, nor in any of its Divisions. They shall be eligible to vote upon Section questions and to hold Section offices except those of Chairman, Vice-Chairman, Secretary (and/or Treasurer). They shall be entitled to all other rights and privileges of Active Members. Affiliates receive the March, June, September and December issues of the JOURNAL each year. (Annual Dues, $4.00.)

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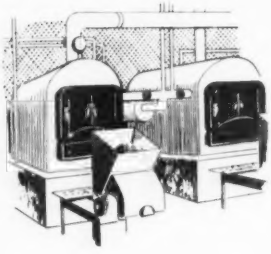

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Alm, Alexander V., *see* Chemical Process Co.

American Valve Mfg. Co., William J. White, Supt., 170 Mansion St., Coxsackie, N.Y. (Assoc. M. Nov. '43)

Armstrong, Paul S., Engr., Fraser Brace Engineering Co., Inc., 10 E. 40th St., New York, N.Y. (Nov. '43)

Archbell, Clarence, Supt., Water & Sewer, 300 E. Merdith St., Marshall, Tex. (Nov. '43)

Atlas Carbon & Clay Corp., Paul Dickerson, Chief Chemist, 700 Ivy St., Glendale, Calif. (Assoc. M. Nov. '43)

Bader, John, Supt., San Gabriel Valley Water Service, 1148 E. Elliott St., El Monte, Calif. (Nov. '43)

Benedict, A. H., Engr., Asphalt Institute, 523 W. 6th St., Los Angeles 14, Calif. (Nov. '43)

Biglow, P. K., Street & Water Supt., 312—10th St., Antioch, Calif. (Nov. '43)

Bird, Harold E., Structural Eng. Assoc., Dept. of Water & Power, 2281 Parnell Ave., Los Angeles 25, Calif. (Nov. '43)

Boen, Doyle F., Civ. Eng. Assoc., Dept. of Water & Power, Box 3669 Terminal Annex, Los Angeles 54, Calif. (Nov. '43)

Bowers, Eugene, Chemist, Metropolitan Water Dist., 2540 Lincoln Ave., Laverne, Calif. (Nov. '43)

(*Continued on page 28*)

To Waterworks Engineers
WHO ARE PLANNING AHEAD

America will need your plans. Millions of our fighting men and still other millions of war workers must someday turn to new jobs in a new and different world. You can help by planning now to avert a serious letdown when Victory is won.

No doubt you are thinking of many projects that not only would improve your municipal water systems, but even more important would provide jobs for returning service men and workers now in war industries. Industry is already laying plans to absorb its share of these people. If federal, state and municipal governments have their plans ready, widespread unemployment will be less of a problem to America.

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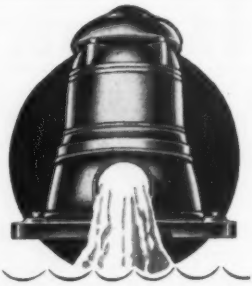

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Brower, Frank, Water Supt., Borough of Union Beach, Poole Ave., Union Beach, R.F.D. No. 1, Keyport, N.J. (Nov. '43)

Cain, Tom. J., Div. Patrolman, Metropolitan Water Dist., 1349 Elwood Ave., Pomona, Calif. (Nov. '43)

Carver, Andy J., Utilities Supt., Clinton Naval Air Station, 500 N. Ninth St., Clinton, Okla. (Nov. '43)

Carver, Leon A., Inspector of Utilities, Bur. of Yards & Docks, 509 N. Ninth St., Clinton, Okla. (Nov. '43)

Chemical Process Co., Alexander V. Alm, Chief Engr., 563 Second St., San Francisco 7, Calif. (Assoc. M. Nov. '43)

Christiansen, Lars E., Foreman, Metropolitan Water Dist., 5946 Great Oak Circle, Los Angeles, Calif. (Nov. '43)

Clark, J. C., Supt., Water Dept., City Hall, Lubbock, Tex. (Nov. '43)

Connelly, John J., Comr., Passaic Valley Water Com., 800 Bloomfield Ave., Clifton, N.J. (Nov. '43)

Cooper, Geo. W., Vice-Pres. & Gen. Mgr., Monterey Bay Water Co., Box 801, Santa Cruz, Calif. (Nov. '43)

Cooper, Gerald S., Assoc. Engr. of Distr. Design, Dept. of Water & Power, 207 S. Broadway, Los Angeles, Calif. (Nov. '43)

Dean, Payne & Co., Laconia, N.H. (Assoc. M. Nov. '43)

Deighton, John T., Comr. & Pres., Passaic Valley Water Com., 125 Ellison St., Paterson, N.J. (Nov. '43)

Denman, F. H., *see* Howard Supply Co.

Dickerson, Paul, *see* Atlas Carbon & Clay Corp.

Dowling, Mary, (**Miss**) Sales Repr., Vinson Specialty Paint Co., Box 1116, Little River Station, Miami 38, Florida. (Nov. '43)

Drane, Brent S., Prin. Engr., Water Div., Office of War Utilities, WPB, 2153 California St., N.W., Washington 8, D.C. (Nov. '43)

Eadie, Wm., Water Purveyor, Water Dept., Kearny, N.J. (Nov. '43)

Elliot, Norman G., Water Engr. & Mgr., Torquay Corp. Water Works, Town Hall, Torquay, Devon, England (Nov. '43)

Ells, J. C., City Engr., 207 W. Valley Blvd., El Monte, Calif. (Nov. '43)

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Enes, Bernard E., Mgr., Enes Water Co., R.F.D. No. 1, Box 480, Pittsburg, Calif. (Nov. '43)

Farabough, T. E., Supt., Water & Sewer Dept., Dumas, Ark. (Nov. '43)

Fisher, Donald G., Sales Engr., Johns-Manville Corp., 195 Washington Ave., Memphis, Tenn. (Nov. '43)

Fitzgerald, John L., Comr. & Vice-Pres., Passaic Valley Water Com., City Hall, Clifton, N.J. (Nov. '43)

Fox, Lloyd D., Chemist, Metropolitan Water Dist., 169 E. Pasadena St., Pomona, Calif. (Nov. '43)

Gardner, Charles W., Draftsman, Dept. of Water & Power, Box 3669 Terminal Annex, Los Angeles 54, Calif. (Nov. '43)

Gardner, Ruskin T., Div. Engr., Wallace & Tiernan Sales Co., 2311 E. 8th St., Los Angeles, Calif. (Nov. '43)

Garrison, K. M., *see* Goodrich, B. F., Co.

Gates, A. J., Supt. & Engr., Water Dept., Municipal Auditorium, Wichita Falls, Tex. (Nov. '43)

Goodrich, B. F., Co., K. M. Garrison, Water Chemist, 532 Vinita St., Akron, Ohio (Corp. M. Nov. '43)

Greensboro Water Dept., W. M. Lynbrook, Supt. of Public Service, Greensboro, N.C. (Corp. M. Nov. '43)

Gresham, Robert L., Valuation Engr., Southern Calif. Water Co., 1206 S. Maple Ave., Los Angeles 15, Calif. (Nov. '43)

Hanson, Arthur M., 2nd Lt., Sn.C., U.S. Army, Truax Field, Wis. (Nov. '43)★

Henson, Frederick John, Prin. Engr., Water Div., Office of War Utilities, 5128 Loughboro Rd., N.W., Washington 16, D.C. (Nov. '43)

Hepler, John M., Dir., Bur. of Eng., Dept. of Health, Lansing 4, Mich. (Nov. '43)

Hickok, Sidney J., Supt., Katonah Water Dist. & Cherry St. Water Dist., 7 Ridge St., Katonah, N.Y. (Nov. '43)

Hodges, J. E., Assoc. San Engr., 11th Naval Dist., 1344 National Ave., San Diego, Calif. (Nov. '43)

Holcomb, Edwin, Chemist, Water & Sewerage Treatment, 2101 Nueces St., Austin, Tex. (Nov. '43)

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Howard Supply Co., F. H. Denman, 5125 Santa Fe Ave., Los Angeles 11, Calif. (Assoc. M. Nov. '43)

Hudson, Thomas L., Sr. Engr., WPB, 14 E. Read St., Baltimore, Md. (Nov. '43)

Jessup, Albert H., Chief Designing Engr., Leeds, Hill, Barrard & Jewett, 224 N. Segovia Ave., San Gabriel, Calif. (Nov. '43)

Jones, Allen A., Prin. Engr., WPB, Temporary R Bldg., Rm. 2611, Washington, D.C. (Nov. '43)

Jones, E. D., Supt., Brownfield Water Dept., Box 307, Brownfield, Tex. (Nov. '43)

Jones, Sparks, Sales Repr., Vinson Specialty Paint Co., Burgess Bldg., Jacksonville, Fla. (Nov. '43)

Jones, T. A., Supt., City Water Dept., Fort Valley, Ga. (Nov. '43)

Keefer, Harold T., Sales & Service Repr., Neptune Meter Co., 3862 Bamberger Ave., St. Louis 16, Mo. (Nov. '43)

Kent, R., *see* Williston Park, Inc. Village of

Kimball, Clyde L., Field Supt., City Water Dept., 303 N. Elm St., Beverly Hills, Calif. (Nov. '43)

Klaer, Fred H., Jr., Assoc. Geologist, U.S. Geological Survey, 445 N. Pennsylvania St., Indianapolis 4, Ind. (Nov. '43)

Kowalchik, Stephen A., Sr. San. Engr., N.J. State Dept. of Health, State House, Trenton, N.J. (Nov. '43)

Kugler, Martin B., Field Supt., Dept. of Water & Power, 410 Ducommun St., Los Angeles, Calif. (Nov. '43)

Lamar, A. A., Asst. Supt., Palisades Del Rey Water Co., 427 Moscow St., Playa Del Rey, Calif. (Nov. '43)

Laverty, Finley B., Chief Hydr. Engr., Los Angeles Co. Flood Control Dist., 751 S. Figueroa St., Los Angeles 14, Calif. (Nov. '43)

Lee, John Douglas, Lecturer, Dept. of Civ. Eng., Queen's University, Kingston, Ont., Can. (Nov. '43)

Lessley, Dillon, Supt., Munic. Water Dept., Box 675, Fortuna, Calif. (Nov. '43)

Lucas, Glenn, Foreman, Metropolitan Water Dist., Box 248, Lomita, Calif. (Nov. '43)

Lynbrook W. M., *see* Greensboro Water Dept.

MacDuff, Harry W., Supt., Dept. of Water Supply, 235 Wessen St., Pontiac, Mich. (Nov. '43)

MacGregor, David, Comr., Passaic Valley Water Com., 152 Market St., Paterson, N.J. (Nov. '43)

Maher, John C., Assoc. Geologist, U.S. Geological Survey, Box 8315, University Station, Baton Rouge, La. (Nov. '43)

Maloy, L. Ernest, Water Works Engr., San Bernardino Water Dept., 195 D St., San Bernardino, Calif. (Nov. '43)

Martin, Sylvan C., 1st Lt., Sn.C., Head, Water Security Section, 9th Service Command, Fort Douglas, Utah (Nov. '43)★

McCarthy, Daniel V., Sr. Engr., WPB, 4417 Dittmar Rd., Arlington, Va. (Nov. '43)

McCleary, W. F., Foreman, Metropolitan Water Dist., Box 42, Arlington, Calif. (Nov. '43)

McHugh, James N., c/o Pub. Works Dept., Lagos, Nigeria, Africa, (Nov. '43)

Merrithew, William S., Asst. Engr., Metropolitan Water Dist., 306 W. 3rd St., Los Angeles, Calif. (Nov. '43)

Mills, Blanchard H., Water Treatment Plant Operator, Bd. of Water & Light Comrs., 1104 Bensch St., Lansing, Mich. (Nov. '43)

Mills, Henry J., Engr., Metropolitan Water Dist., 1615 E. Mountain St., Pasadena 7, Calif. (Nov. '43)

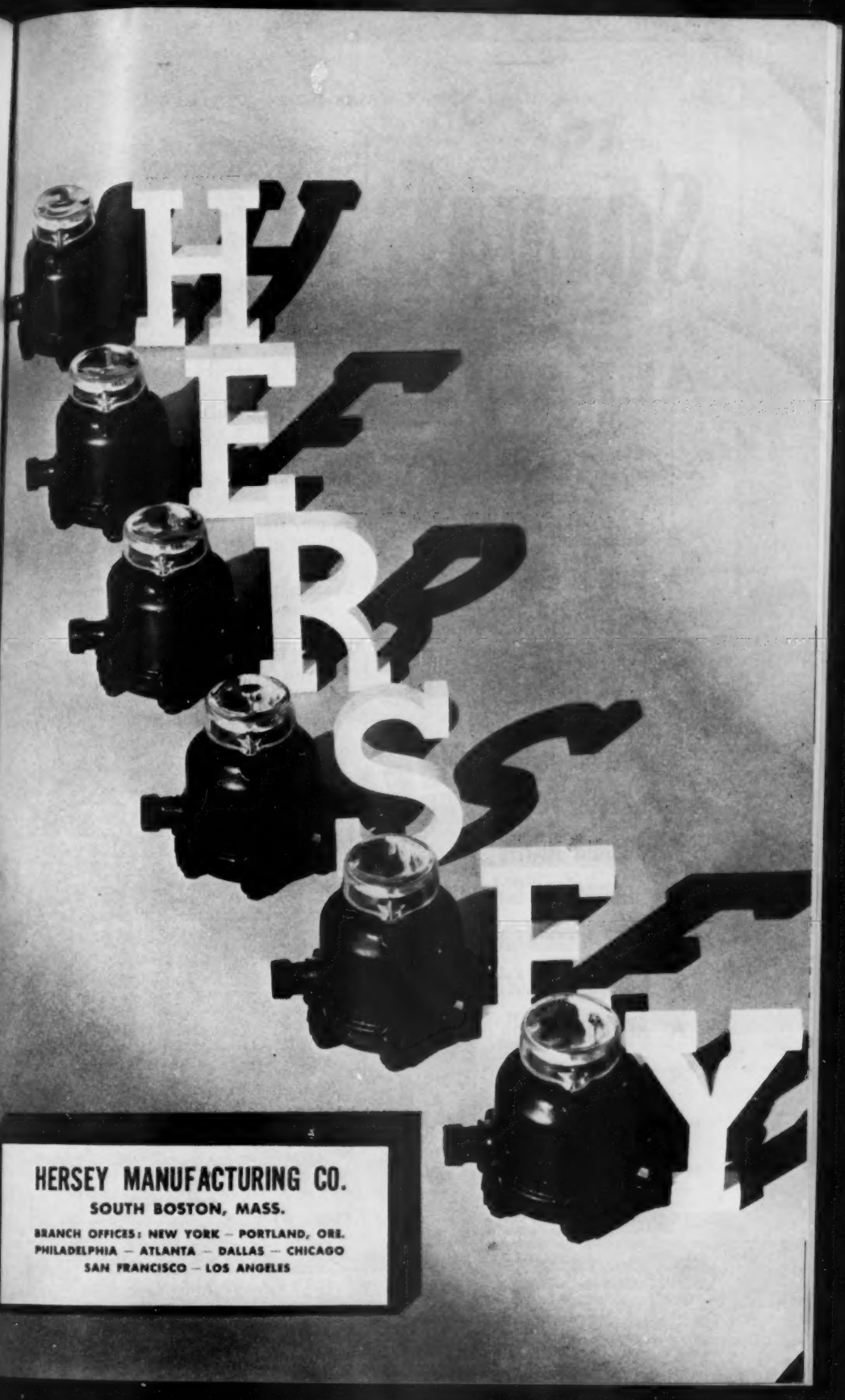
Morris, John H., Watershed Inspector, Bur. of Eng., N.J. State Dept. of Health, 36 Carroll St., Trenton 9, N.J. (Affil. Nov. '43)

Mountford, Joseph, Inspector, Guelph Water Works, City Hall, Guelph, Ont., Can. (Nov. '43)

Mulholland, R. A., San Engr., Bur. San. Eng., State Health Dept., Austin 14, Tex. (Nov. '43)

Naehr, Harry F., Supt. of Plants, U.S. Engrs., Box 1523, Fort Benning, Ga. (Nov. '43)

(*Continued on page 34*)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Nihiser, A. L., Sr. Operating Engr., Fort Benjamin Harrison, 6136 Lowell Ave., Indianapolis, Ind. (Nov. '43)★

Oberlin, Leary L., 265 Crystal Lake Drive, Pontiac, Mich. (Nov. '43)

Ogden, Willis L., 1103 W. Illinois St., Urbana, Ill. (Jr. M. Nov. '43)

O'Mara, Edmund M. C.P.O., Chief Stoker, R.C.N.V.R., H.M.C.S. Cornwallis, Cornwallis, N.S., Can. (Nov. '43)★

Paessler, Alfred H., Acting Supt., Filter Plant, 4300 Avenue D, Austin, Tex. (Nov. '43)

Parker, Earl, Supt., Water & Sewer Dept., Gladewater, Tex. (Nov. '43)

Patton, Horace M., Engr., Water Div., WPB, Rm. 2750, Temporary R. Bldg., Washington, D.C. (Nov. '43)

Pearson, Harold E., Agricultural Chemist, Metropolitan Water Dist., 250 E. Holt, Pomona, Calif. (Nov. '43)

Phillips, Robert V., Civ. Eng. Assoc., Dept. of Water & Power, City of Los Angeles, Box 131, Independence, Calif. (Nov. '43)

Plummer, Raymond B., Prin. Engr., 4827 Chevy Chase Blvd., Chevy Chase, Md. (Nov. '43)

Pomeroy, Richard, Cons. Chemist, Montgomery & Pomeroy, 117 E. Colorado St., Pasadena 1, Calif. (Nov. '43)

Preston, A. E., Mechanical Foreman, Metropolitan Water Dist., 2510—4th St., Laverne, Calif. (Nov. '43)

Rider, Ezra B., Engr., Metropolitan Water Dist., 306 W. Third St., Los Angeles 13, Calif. (Nov. '43)

Robertson, William J., Field Engr., Water Dept., 2018 N.W. 17th St., Oklahoma City, Okla. (Nov. '43)

Schroeder, G. A., Supt., Water Dept., 305 W. Nott St., Tomah, Wis. (Nov. '43)

Shank, Robert D., Supervising Clerk, Dept. of Water & Power, 410 Ducommun St., Los Angeles, Calif. (Nov. '43)

Sharp, Edwin T., Asst. Supt. of Stores, Dept. of Water & Power, 410 Ducommun St., Los Angeles, Calif. (Nov. '43)

Shipley, Fred G., Engr., Public Service Dept., 1401 Valley Heart Drive, Burbank, Calif. (Nov. '43)

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Siegel, Joseph, Civ. Eng. Assoc., Dept. of Water & Power, Box 3669 Terminal Annex, Los Angeles 54, Calif. (Nov. '43)

Silberbauer, Walter R., Engr., Campbell Water Co., 14 Rincon Ave., Campbell, Calif. (Nov. '43)

Singer, Robert, Supt., Water Dept., 2112 S. 77th St., West Allis, Wis. (Nov. '43)

Skiles, A. W., Plant Operator, Water Dept., 345 S. Palm, Beverly Hills, Calif. (Nov. '43)

Sloat, Harry M., Eng. Aide, Dept. of Water & Power, 746 S. Coronado St., Los Angeles, Calif. (Nov. '43)

Smith, Philip W., Field Supt., Dept. of Water & Power, 14601 Aetna St., Van Nuys, Calif. (Nov. '43)

Sousa, Philip J., Comr. of Public Works, Santa Cruz, Calif. (Nov. '43)

Spitz, Benjamin J., Counsel, Passaic Valley Water Com., 45 Church St., Paterson, N.J. (Nov. '43)

Stephenson, Clyde T., Chief Engr., State Hospital, Box 476, Jamestown, N.D. (Nov. '43)

Stokes, Thos. M., Mgr. of Utilities, Box 167, Bastrop, Tex. (Nov. '43)

Streicher, Lee, Chief Chemist, Metropolitan Water Dist., 545 Cloverleaf Way, Monrovia, Calif. (Nov. '43)

Sullivan, George C., Prin. Engr., Rm. 2740, Temporary R Bldg., Washington, D.C. (Nov. '43)

Teece, Carleton P., Supt. of Pumping, Passaic Valley Water Com., Pumping & Generating Station, Little Falls, N.J. (Nov. '43)

Tibbett, William M., San. Eng. Inspector, Dept. of Water & Power, Box 3669 Terminal Annex, Los Angeles, Calif. (Nov. '43)

Tillman, Martin, Supt. of Filtration Plant, Box 671, Antioch, Calif. (Nov. '43)

Urton, J. R., Supt., Water Works, Box 21, Carlisle, Ark., (Nov. '43)

Walker, Ray E., Asst. Water Supt., Water Dept., San Fernando, Calif. (Nov. '43)

Walthall, J. D., Supt., Light & Water Dept., Homer, La. (Nov. '43)

Welmon, William C., Secy. & Chief Acctg. Officer, Southern California Water Co., 1206 S. Maple Ave., Los Angeles 15, Calif. (Nov. '43)

White, William J., *see* American Valve Mfg. Co.

Williams, Frank J., Field Supt., Dept. of Water & Power, 14601 Aetna St., Van Nuys, Calif. (Nov. '43)

Williston Park, Inc. Village of, R. Kent, Clerk, 494 Willis Ave., Williston Park, N.Y. (Corp. M. Nov. '43)

Wilson, Owen, Asst. Engr., Metropolitan Water Dist. 306 W. 3rd St., Los Angeles 13, Calif. (Nov. '43)

Wirz, Herman, Jr., Field Supt., Dept. of Water & Power, 1639 W. 219th St., Torrance, Calif. (Nov. '43)

Woodall, Lewis F., Territorial Repr., Johns-Manville Co., 3124 S.W. First Ave., Miami, Fla. (Nov. '43)

Woodbury, William Rodes, City Mgr., 400 N. Boundry St., Williamsburg, Va. (Nov. '43)

Wyatt, Wendell C., San Engr., Camp Phillips, Salina, Kan. (Nov. '43)

REINSTATEMENTS

Benedict, Earl N., Purif. Engr., Water Dept., City Hall, Wichita Falls, Tex. (Oct. '39)

Blakeman, H. W., Supt., Light & Water Dept., Rayville, La. (Jan. '36)

Cantley, Clarence G., Filter Operator, Water Works Dept., Box 333, Clendenin, W.Va. (Affil. Jan. '40)

Cassidy, H. James, Civ. Engr. Assoc., Dept. of Water & Power, Box 3669 Terminal Annex, Los Angeles 54, Calif. (July '36)

Daniels, Percy, Supt., Water Dept., Box 404, Weleetka, Okla. (Oct. '39)

Daugherty, A. B., Supt., Water Works, East Gary, Ind. (Jan. '41)

Duke, M. B., *see* Jones, James, Co., Inc.

Golder, Hugh C., Technical Mgr., Economic Water Softeners, Ltd., Warwick Road, Greet, Birmingham 11, England (July '37)

Hoag, E. D., 1st Lt., C.E., A.P.O. 724, Seattle, Wash. (Oct. '34)★

Jarrett, J. M., Dir., Div. of San. Eng., State Bd. of Health, Raleigh, N.C. (June '27)

Jones, James, Co., Inc., M. B. Duke, 201 Leroy St., Los Angeles 12, Calif. (Assoc. M. Oct. '21)

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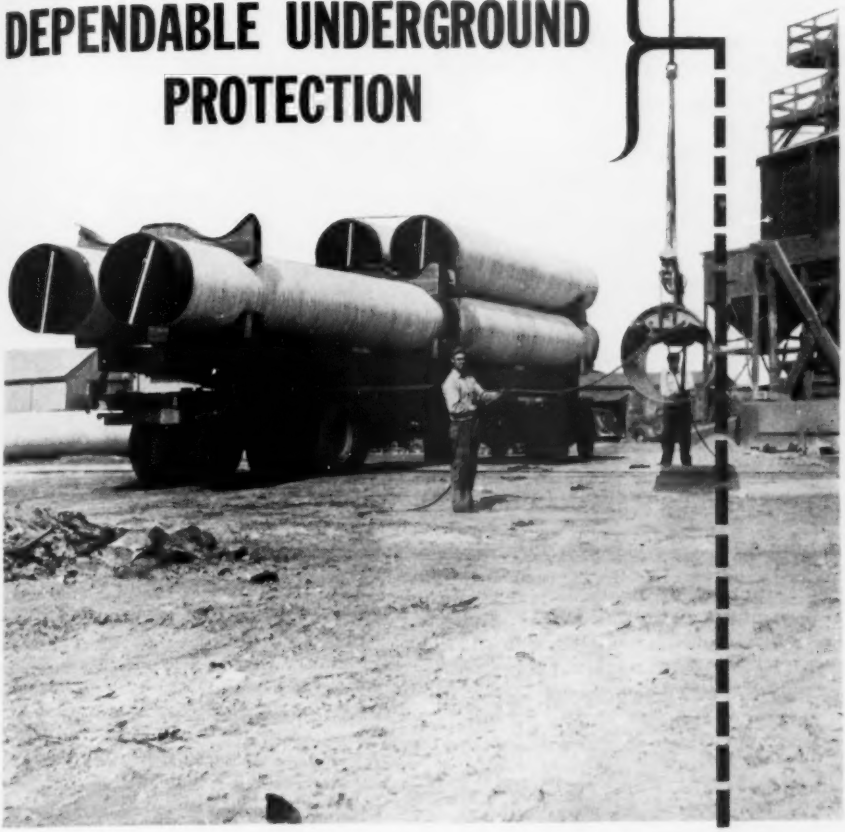

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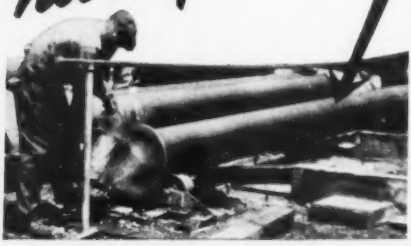

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Lugo, Thomas A., Draftsman, Bur. of W.W. & Supply, Box 3669 Terminal Annex, Los Angeles 54, Calif. (Oct. '34)

McLaughlin, Richard R., *see* Westchester Co. Dept. of Health

Porter, Fred S., Div. Engr., Long Beach Water Dept., 3939 Myrtle Ave., Long Beach, Calif. (Oct. '32)

Powell, W. L., Lt. Cmdr., Asst. Pub. Works Officer, Pub. Works Dept., Marine Barracks, Quantico, Va. (Jan. '36)★

Van Camp, Paul M., Civ. Engr., Southern Pines, N.C. (Nov. '31)

Westchester Co. Dept. of Health, Richard R. McLaughlin, Dir., Div. of Sanitation, County Office Bldg., White Plains, N.Y. (Corp. M. Dec. '30)

White, Ensley M., Supt., Pub. Works, 15 St. Nicholas Pl., Red Bank, N.J. (July '37)

Whitman, Earl Roger, Civ. Eng. Assoc., Bur. of W.W. & Supply, Box 3669 Terminal Annex, Los Angeles, Calif. (Oct. '35)

LOSSES—DEATHS

Heermans, H. C., 817 J St., Hoquiam, Wash. (June '86)

Mower, Stanley E., 518 University Block, Syracuse, N.Y. (Apr. '37)

Changes in Address

Changes of address between October 15 and November 15, 1943

Ackerman, Arthur P., Stockbridge Rd., Great Barrington, Mass. (Apr. '43)

Bachmann, Frank, San. Engr. Div., The Dorr Co., Inc., 570 Lexington Ave., New York 22, N.Y. (Feb. '15)

Bacon, Harold R., *see* Birmingham Water Co.

Bell, W. W., Northeastern Water & Elec. Service Corp., 21 West St., New York 6, N.Y. (July '35)

Bennett, Boyd A., Pres., Northeastern Water & Elec. Service Corp., 21 West St., New York 6, N.Y. (Jan. '37)

Birmingham Water Co., Harold R. Bacon, Gen. Mgr., 33 Elizabeth St., Derby, Conn. (Corp. M. May '09)

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Brown, Wade Gillies, Chemist, Water Dept., 2018 Sunset Ave., Durham, N.C. (Apr. '43)

Cleverdon, Walter S. L., 33 Deshon Ave., Bronxville 8, N.Y. (Apr. '16)

Connors, Joseph J., 2138 Center St., Berkeley 4, Calif. (Oct. '42)

DeBerard, Emmons W., c/o Mrs. E. W. DeBerard, 802 Elmwood Ave., Wilmette, Ill. (Oct. '41)★

Egginson, Howard G., Box 131, Church St., Alpine, N.J. (Jan. '42)

Flannery, Charles A., Lt. Col., C.E., P.O. Box AT Carmel, Calif. (Oct. '38)★

Foerster, Wm. K., Engr., Public Service Dept., 324 W. Valencia Ave., Burbank, Calif. (July '39)

Glenn, James L., 1343 McCutcheon Ave., Manhasett Village, Richmond Heights, Mo. (July '42)

Goit, Laurance E., Asst. Chief Engr., Dept. of Water & Power, Box 3669 Terminal Annex, Los Angeles, Calif. (Oct. '34) *Goodell Prize '37.*

Grant, Donald K., Dist. Mgr., Ruta Restor Corp., 2854 N. Summit Ave., Milwaukee 11, Wis. (Apr. '42)

Hainstock, H. N., Dist. Mgr., International Water Supply, Ltd., 1722 College Ave., Regina, Sask., Can. (Apr. '41)

Haring, F. D., *see* Ramsey Water Works

Hatch, A. S., Gen. Supt., Dept. of Public Utilities, Water Div., 711 City Hall, Houston, Tex. (Oct. '42)

Henderson, Angus D., Asst. Engr., 210-07—29th Ave., Bayside, N.Y. (Jan. '37)

Hersey, T. Schuyler, Pres., Hersey Inspection Bureau, 3405 Piedmont Ave., Oakland 11, Calif. (Jan. '40)

Hurlbut, William W., Chief Engr. of Water Works & Deputy Gen. Mgr., Dept of Water & Power, Box 3669 Terminal

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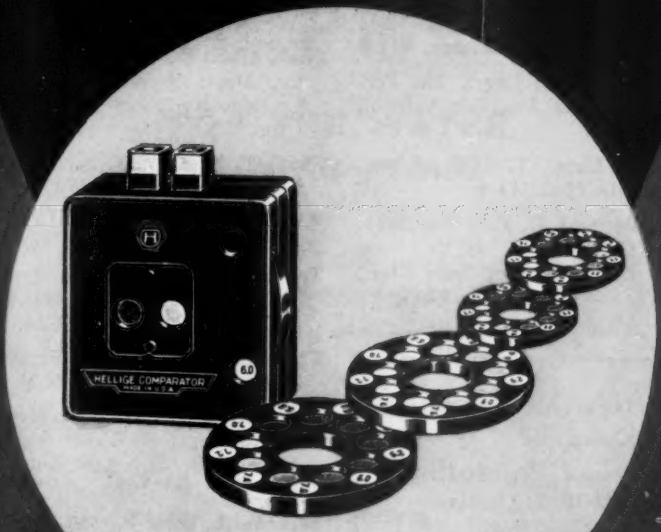

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Ohr, Milo F., c/o H. C. Weaver, Chilhowee Drive, Knoxville, Tenn. (Jan. '42)

Pearl, Emanuel H., 1st Lt., C.E., 4549 Belclaire Ave., Dallas 5, Tex. (Jan. '37)★

Ramsey Water Works, F. D. Haring, Chairman, Water Com., 33 N. Central Ave., Ramsey, N.J. (Corp. M. July '35)

Shull, Albert B., Water Treatment Operator, Dept. of Water & Power, 2488 Coolidge Ave., Los Angeles, 34, Calif. (Apr. '33)

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Tessier, A. H., Dist. Mgr., International Water Supply, Ltd., 1414 University Tower, Montreal, Que., Can. (Jan. '37)

Tinghir, V. J., WPB—Facilities, 350 Fifth Ave., New York 1, N.Y. (Apr. '43)

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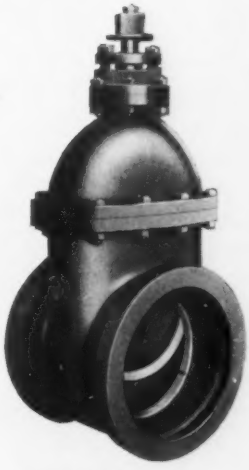

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Graver Tank & Mfg. Co.
Pittsburgh-Des Moines Steel Co.

Strainers, Suction:
Edson Corp.
R. D. Wood Co.

Swimming Pool Sterilization:
Ozone Processes, Inc.
Proportioneers, Inc.
Wallace & Tiernan Co., Inc.

Tanks, Mixing:
Alco Products Div., Am. Loco. Co.
Chicago Bridge & Iron Company
Graver Tank & Mfg. Co.
Pittsburgh-Des Moines Steel Co.

Tanks, Steel:
Chicago Bridge & Iron Company
Graver Tank & Mfg. Co.
Pittsburgh-Des Moines Steel Co.

Tapping Machines:
Mueller Co.
A. P. Smith Mfg. Co.

Taste and Odor Removal:
American Water Softener Co.
Graver Tank & Mfg. Co.
Industrial Chemical Sales
Infilco, Inc.
Ozone Processes, Inc.
Proportioneers, Inc.
Stuart-Brumley Corp.
Vogt Mfg. Co.
Wallace & Tiernan Co., Inc.

Telemeters, Level, Pump Control, Rate of Flow, Gate Position, etc.:
Builders-Providence, Inc.
Simplex Valve & Meter Co.

Turbidimeters:
Hellige, Inc.
Wallace & Tiernan Co., Inc.

Turbines, Steam:
DeLaval Steam Turbine Co.
Worthington Pump & Mach. Corp.

Turbines, Water:
DeLaval Steam Turbine Co.

Valve Boxes:
Central Foundry Co.
H. W. Clark Co.
Ford Meter Box Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Mueller Co.
Rensselaer Valve Co.
A. P. Smith Mfg. Co.
Vogt Bros. Mfg. Co.
R. D. Wood Co.

Valve Inserting Machines:
A. P. Smith Mfg. Co.

Valves, Altitude:
Ross Valve Mfg. Co., Inc.
Simplex Valve & Meter Co.

Valves, Check, Flap, Foot, Hose, Mud and Plug:
A. D. Cook, Inc.
Ludlow Valve Mfg. Co.
Mueller Co.
Rensselaer Valve Co.
R. D. Wood Co.

Valves, Detector Check:
Hersey Mfg. Co.
Grinnell Co.

Valves, Electrically Operated:
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Rensselaer Valve Co.
A. P. Smith Mfg. Co.

Valves, Float:
Ludlow Valve Mfg. Co.
Ross Valve Mfg. Co., Inc.

Valves, Gate:
Dresser Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
M & H Valve & Fittings Co.
Mueller Co.
Rensselaer Valve Co.
A. P. Smith Mfg. Co.
Vogt Bros. Mfg. Co.
R. D. Wood Co.

Valves, Hydraulically Operated:
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Mueller Co.
Rensselaer Valve Co.
A. P. Smith Mfg. Co.
R. D. Wood Co.

Valves, Large Diameter:
Alco Products Div., Am. Loco. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Rensselaer Valve Co.
A. P. Smith Mfg. Co.
R. D. Wood Co.

Valves, Regulating:
Mueller Co.
Ross Valve Mfg. Co.

Valves, Swing Check:
Grinnell Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Mueller Co.
Rensselaer Valve Co.
A. P. Smith Mfg. Co.
R. D. Wood Co.

Vibrators (Chemical Feeding):
Syntron Co.

Water Softening Plants:
(See Softeners)

Water Supply Contractors:
A. D. Cook, Inc.
Layne & Bowler, Inc.

Water Testing Apparatus:
Hellige, Inc.
LaMotte Chemical Products Co.
Wallace & Tiernan Co., Inc.

Water Treatment Plants:
American Water Softener Co.
American Well Works
Chicago Bridge & Iron Company
Dorr Co.
Graver Tank & Mfg. Co.
Infilco, Inc.
Ozone Processes, Inc.
Pittsburgh-Des Moines Steel Co.
Vogt Mfg. Co.
Wallace & Tiernan Co., Inc.
Worthington Pump & Mach. Corp.

Water Waste Detection:
H. C. Nutting Co.
Pitometer Co.

Water Works Construction, General:
Pittsburgh-Des Moines Steel Co.

Well Drilling Contractors:
A. D. Cook, Inc.
Layne & Bowler, Inc.

Well Screens:
A. D. Cook, Inc.

Wrenches, Ratchet:
Dresser Mfg. Co.

Zeolite:
American Water Softener Co.
Graver Tank & Mfg. Co.
Infilco, Inc.
Permutit Co.
Zeolite Chemical Co.

THREE WAYS

To Get the Most Out of Your Meters

1 CHECK PERIODICALLY

Conserve as you serve by making your present meters last for the duration. Your country's interests come first. Institute an immediate program of inspection, repair and maintenance. Remember, an inaccurate or inoperative meter is a liability.

2 REPAIR AND TEST THOROUGHLY

Don't replace meters when they can still be repaired. Good meters require but little attention, but when they are renovated, do a complete job. A properly repaired meter should test as good as new. The cost of a thorough overhaul is only slightly more than that of a slipshod job.

3 BUY ONLY THE BEST METERS

When you buy war-model meters, buy only the best. All Pittsburgh-National Meters comply with the WPB Limitation Order. They provide top wartime measurement value. They will serve you faithfully for the duration and for years to come. Today, as always, there's a Pittsburgh-National Meter for every kind of service.

Back The Attack With War Bonds

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BOSTON, BROOKLYN, BUFFALO, CHICAGO, COLUMBIA, HOUSTON, KANSAS CITY, PITTSBURGH, LOS ANGELES, SAN FRANCISCO, MEMPHIS, SEATTLE, NEW YORK, TULSA

MERCO NORDSTROM VALVE COMPANY
Main Offices, Pittsburgh, Pa.

NATIONAL METER DIVISION, Brooklyn, N. Y.

PITTSBURGH-NATIONAL Water Meters

When Submarines Take "Shore Leave"

This intriguing emblem is the insignia of our Navy's Submarine Forces. It shows bow view of a submarine proceeding on the surface. Its bow rudders are flanked by dolphins in a horizontal position with their heads resting on the upper edge of the rudders. Enlisted men wear this insignia on the right sleeve just above the cuff as a distinguishing mark.

★

U.S. Navy Photo

WAITING for our "subs" when they return to home port are crews of trained mechanics ready to repair and refuel them.

Dressers too, are ready. At numerous bases in the North Atlantic, along the Caribbean and in the Pacific, water, gasoline and oil lines are Dresser-Coupled.

These pre-fabricated, quickly-installed pipe line products are also used extensively for marine piping for bulkhead seals and for other naval applications.

Afloat or ashore, wherever pipe must be joined speedily and permanently or repaired quickly and easily, Dresser Couplings, repair clamps and sleeves perform their mission.

WITH production greater than at any time in Dresser history, these familiar pipe line products are fortunately still available on proper priority in nearly all sizes and quantities.

Dresser Manufacturing Co., Bradford, Pa.

DRESSER

Pipe Couplings, Repair Devices, Rings, Wheels, and Forgings for War

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Generally speaking, most Water Mains are buried beneath the Earth's surface, to be forgotten,—they are to a large extent, laid for permanency. Not only must the pipe itself be dependable and long lived,—but the joints also must be tight, flexible, and long lived,—else leaky joints are apt to cause the great expense of digging up well-paved streets, beautiful parks and estates, etc.

Thus the "jointing material" used for bell and spigot Water Mains MUST BE GOOD,—MUST BE DEPENDABLE,— and that is just why so many Engineers, Water Works Men and Contractors aim to PLAY ABSOLUTELY SAFE, by specifying and using LEADITE.

Time has proven that LEADITE not only makes a tight durable joint,—but that it improves with age.

The pioneer self-caulking material for c. i. pipe.
Tested and used for over 40 years.
Saves at least 75%

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